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School Health Services

A PANEL DISCUSSION

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CHAIRMAN'S SUMMARY

G. F. AMYOT, M.D., D.P.H.
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THE interest apparent in the panel discussion on school health services can be taken as an indication that public health and educational authorities feel some concern regarding the effectiveness of existing school health services. With reference to the speakers taking part in the panel discussion, it should be pointed out that in order to present as many aspects of the problem as possible, in one or two instances the speaker has presented views which are not necessarily in accord with those held by the speaker himself.

The problem of the responsibility for provision of school health services has been dealt with from two different viewpoints by the first two speakers. It has been pointed out that where the generalized public health service has not been provided, many school boards have developed a school health service of a very high type, a service which no doubt served as a stimulant to the development of community health services. It has been pointed out, on the other hand, that the over-all value of a school service is dependent on the development of an adequate community health service since many of the problems which concern the school child, to be dealt with adequately, must be handled on a community basis, and accordingly responsibility for the total program should fall on the Department of Health.

Presented at the thirty-fourth annual meeting of the Canadian Public Health Association, held in conjunction with the thirtieth annual meeting of the Ontario Health Officers Association, in the Royal York Hotel, Toronto, May 6-8, 1946.

The question of the routine examination of school children by the school health officer is still, or rather has become, somewhat of a contentious problem. It is recognized that, from a theoretical point of view, there is much to be said for this procedure if advantage is taken of the opportunity to carry out constructive health teaching at the time of the examination. There is no question that excellent results have been obtained where this method has been adopted by health services having sufficient funds and personnel to carry it out without handicapping the community health service as a whole.

It has been pointed out, on the other hand, that if a generalized public health program is to be provided, the practical answer to the problem of the physical examination of school children in the average health department with an average budget and personnel, is utilization of the screening method. It has been demonstrated that the trained public health nurse is quite competent in so far as detection of the usual physical defects is concerned. It has also been suggested that the public health nurse has many more opportunities for carrying out constructive health education in the home and the community as it affects school children directly, than the school health officer; and the recommendation that the school physician dispense with routine examinations on the whole, and that the time alloted to school physical examinations be devoted to the more thorough examination of those children especially referred to him as a result of screening process carried out by the nurse and teacher, bears considerable merit in the opinion of a very considerable number of health authorities. It has been emphasized that the school service in health units certainly is a definite part of the total community health service, and in view of the increasing recognition of the importance of the generalized community program, it is to be expected that more and more health departments will develop some form of screening procedure as a practical step towards meeting the needs of the community for health services generally.

The problem of school health instruction has been dealt with from two angles, one the responsibility for health instruction, the other the preparation of the teachers giving the health instruction. In the past in many health departments, far too little attention has been given to health education for a group of society by which, if properly dealt with, it can be readily assimilated. Sharing of this responsibility for health instruction in schools by the educational and health authorities on the basis carried out in the past has led to confusion and misunderstanding in many instances and the present discussion has helped to clear away this confusion in the minds of many by emphasizing the point that health instruction is the responsibility of the teacher.

Dissatisfaction with health teaching in the schools in the past, it is suggested, stems primarily from the failure to properly prepare the teacher for the role he is to assume. It is in this respect of the problem where much progress might be made by better co-operation between the health and educational authorities in order to ensure, as suggested by the speakers, adequate preparation of the teacher for carrying out health instruction in the school. One cannot help but be impressed by the need to clear our thinking in respect to the problems discussed under this heading and take definite action along the lines indicated to make health teaching in schools much more effective than in the past.

Apart from the question of responsibility for health teaching and the training of the health teacher, there remains for consideration the problem presented by the curriculum itself. If there is to be developed the type of teaching required and this field is to be made more interesting and worth-while to the teachers and students alike, at the same time there must be provided a curriculum that will make health teaching a vital thing which will produce practical, applied and lasting results. Again, co-operative planning by the health and educational authorities is not only indicated but imperative if there is to be satisfactory health education in the schools.

Abstracts of the articles prepared by the speakers taking part in this panel discussion are given below:

SHOULD SCHOOL BOARD OR HEALTH DEPARTMENT CARRY OUT HEALTH SERVICES?

C. B. ROUTLEY
Assistant Superintendent of Elementary Education
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IT would be presumptuous to elaborate the merits of the independent or specialized health service or the demerits of the more generalized program. However, one can, at least, pay tribute to the excellent work done by the many independent units which existed before the more generalized programs were established. In many instances, the independent units paved the way for the more generalized units.

An independent health unit is established by a board of education, a school board, or a number of school boards, and the generalized program by a municipal council. It is usual to appoint a committee of a number of members of a school board or a council to serve as a health committee. The committee appointed by a board of education or a number of school boards serves without remuneration. The committee appointed by a municipal council receives fees for attendance at meetings of the health committee and the personnel may change with each municipal election. As personal interest is often greater when public-minded people lend their support for the public good without remuneration, can it be assumed, therefore, that the interest of the committee receiving no remuneration surpasses that of the paid committee?

A small health unit of three nurses with which I am familiar holds a monthly meeting with an interested health committee. The nurses give a short report of their work for one month. The committee is loud in its praise of the work of the nurses and marvels that three persons can accomplish the great amount of work they do. A part of the yearly report of these nurses reveals that in addition to attendance at clinics, an immunization program, etc., etc., they inspected monthly some 4,800 children, gave 2,772 vision tests, made 3,310 home visits. This is a partial report of a small unit established by a number of school boards, and I challenge its duplication by any other unit of three nurses.

SHOULD SCHOOL BOARD OR HEALTH DEPARTMENT CARRY OUT HEALTH SERVICES?

H. L. LOGAN, M.D., D.P.H.
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Department of Health
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IN discussing the subject of school medical services, we are all agreed that such a service is necessary, but divided on the question of jurisdiction. In my opinion there is no argument. Such services should be under the control of the public health authorities.

There are many phases to a medical service in the schools. I shall mention but a few of them.

(a) *Services and Health Protection*

Here we must consider prevention and control of communicable diseases. These must be based on modern methods. Are we liable to get as complete a covering and will we have the opportunity to make use of the most modern methods if control is under educational authorities? I say NO, because under health authorities we have access to plans, methods, etc., which are not available through educational authorities.

(b) *Sanitation and Water Supplies*

Who is in a better position to advise in these matters, educational or public health authorities? I say, undoubtedly it is the latter.

(c) *Specific Preventive Treatment*

Unquestionably this phase should be controlled by public health authorities. Such things as problems of smallpox vaccination, diphtheria toxoiding, and tuberculosis control, to name only a few, are beyond the shadow of a doubt the responsibility of public health, rather than of educational authority.

(d) *Health Records*

Finally there is the question of records. We all know of cases where local educational authorities have set up individual record forms according to the ideas of each individual authority. This leads to chaos because, as all will admit, records must be systematized to be of any value in forming conclusions regarding any subject. These should certainly be under public health jurisdiction.

Many other arguments could be cited, if time permitted, to show that the logical position for a school medical service is under the authority of public health. Under education, such a service would tend to become more and more sectional, while under public health the service would have a broader outlook and a wider background of knowledge of the subject. Without a doubt the logical place for school medical services is under the jurisdiction of public health authority.

SCREENING BY PUBLIC HEALTH NURSE AND TEACHER VERSUS THE STANDARD ROUTINE EXAMINATION

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THE routine physical examination of school children by the school medical officer as required in the average school program is an unnecessary waste of valuable time, money, and effort that might be spent to better advantage on more important aspects of a generalized public health service.

Approximately 50 per cent of school children examined are relatively free of defects.

The physical defects found in school children are largely those concerned with teeth, vision, tonsils and adenoids. These conditions account for approximately 90 per cent of the total.

It is suggested that the detection of most of these defects does not require the attention, originally at least, of a medical officer, who need bring to the inspection no greater skill than that possessed by the average health nurse. The physician's examination of teeth is, as a rule, one which can be duplicated by the public health nurse. Tests for defects of vision and hearing are even now carried out in most schools by the nurse or teacher. The majority of defects of tonsils and adenoids are, for the purpose of the examination, as readily apparent to the public health nurse as to the physician.

Considerable time in the past has been spent by the school physician in examining the lungs of school children, and yet chronic disease, especially tuberculosis, in this age group is exceedingly rare, while the presence of an acute respiratory infection is usually apparent to even the casual observer.

Much time again has been spent by the medical officer in examining hearts of school children and a great many murmurs, many of them transient or of no significance, have been recorded. Fortunately again, heart disease in children is relatively rare and experience has shown that the nurse because of her knowledge concerning the child, including information respecting previous illnesses, is able to bring to the attention of the school health physician the true cardiac cases which the physician may or may not find in the time allowed him for the routine physical examination of the individual child.

It is suggested further that the routine examination places too much emphasis on the purely physical side of the problem of the school child. Surely there is more to a school service than the detection of physical defects and promotion of physical health.

Figures given by the authorities on the subject indicate that there are as many behaviour defects, as many social and emotional problems, as there are physical problems requiring correction in school children. As long as the emphasis remains on the purely physical side and so much time is spent on it, little will be done for mental health problems by the average health service in the average community.

Moreover, with the limitations on personnel and service as they exist in

the average department of health, little will be done to have physical defects and behaviour problems corrected at the time when they should be corrected —in the preschool years—if the school medical officers must devote an excessive amount of time to the school-age child. Furthermore, over-emphasis of the school service handicaps the development of the generalized program and no matter how much time is spent on it, a school service in the long run can only be as good as the service provided for the community as a whole.

In view of such considerations, it is suggested that the best use be made of available facilities and that personnel be used according to their training and ability, and in the case of the schools make the public health nurse responsible for the routine physical examination of school children, and in consultation with the teacher refer to the family physician or to the school medical officer only those children who may require treatment or further examination as the case may be. In other words, the nurse and the teacher should be used to screen out those children with defects or problems which do not require the attention of the physician and so permit the public health physician to develop his service in a manner which will be of greater benefit to the community as a whole.

There is nothing new about such proposals. The screening method has been used to great advantage by a number of health departments for many years. It is suggested that the adoption of this procedure will facilitate the development of the community public health service in health units generally.

DANGERS IN TEACHER-NURSE SCREENING

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Canadian Educational Association
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THE screening by teachers and nurses of pupils to be examined by doctors would undoubtedly in most instances make more economical use of professional time. But there is danger that too much reliance may be placed on this procedure.

The weakness of the plan is that it places too much responsibility on teachers, who, in most cases, already have more than enough to do. Admittedly teachers should give close attention to the physical and mental health of pupils. But under conditions of pressure a teacher tends to acquire the attitude that pupils are trying to "get away with something" if they fail in any respect to measure up to average standards. For example, when a pupil asks to be excused from a P.T. class on the plea that he is not feeling up to the mark, the harassed teacher may tell him abruptly to get into his gym suit and work it off. Similarly one who is trying to teach an academic subject to forty pupils will rapidly classify the languid pupil as merely lazy and fail to detect any ailment whatever in a pupil who is mentally alert.

Surely training and skill are needed to detect certain physical conditions that require treatment. If this is so, at least a few pupils may pay the penalty

of neglect if teacher-nurse screening is substituted for examinations by the doctor through most of the child's school career.

It would appear to me as an educator that the teacher's true function in this field is to promote physical and mental health as a positive state of well-being, to make the lives of the pupils at school as actively healthy and happy as possible. The doctor and the nurse also will have a part in this positive program, but they and they alone are truly qualified to detect any but the more obvious physical defects which should have remedial treatment.

SCREENING BY PUBLIC HEALTH NURSE AND TEACHER VERSUS THE STANDARD ROUTINE EXAMINATION BY THE SCHOOL MEDICAL OFFICER

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Department of Health and Public Welfare of Manitoba
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SCHOOL health services in the past have been concerned in a large measure with the routine physical check-over of the school children by the medical officer. They have been for many years accepted as a major part of any health program in a community.

In the larger centres over the course of years, the examinations have been carried out in some places under the direction of the Health Department, and in others, the Department of Education.

It is my purpose to place before you the suggestion that a physical examination of all school children by the medical officer is not necessary, and, also, is an impossibility without devoting too large a proportion of his time to the schools which might be much more profitably spent in well-baby clinics, prenatal clinics, immunization clinics, or other phases of a well-rounded health program in a community.

We realize that for many children the only professional health services which they will experience are those provided by the medical health officer and the public health nurse in the school. Any examinations, however, which may or can be given in the school, should not be considered by the parents as a substitute for periodical examinations by the family physician or dentist. In the school, lack of time and facilities do not permit a thorough physical examination. The medical health officer should, however, look on the limited examination as of definite value as an educational experience to the child.

The actual physical examination will, in most cases, begin with a consideration of the eyes, ears, nose and throat, palpation of the thyroid gland, examination of chest and heart, legs and abdomen, the general appearance and posture of the child.

Before examining a class, most medical officers with experience can estimate with a fair degree of accuracy the types and percentages of the various defects that they will find. I think that you will agree that the grist to the mill, particularly in Grade 1, year after year, is fairly constant, and in my experience shows little sign of diminishing.

When the child is brought in for the examination, we always find that the nurse has already carried out a preliminary examination, and it has been our experience that her findings in the vision, teeth and tonsils varies but little from ours.

For the purpose of this discussion the records of 1000 first-grade examinations were checked as to the findings of the medical officer and the nurse.

Defects Recorded by Nurse		*By Medical Officer*
Total No. with Defects—	509 - 50.9%	496 - 49.6%
Dental Defects	462 - 46.2%	441 - 44.1%
Tonsils	196 - 19.6%	180 - 18%
Vision	21 - 2.1%	21 - 2.1%
Hearing	10 - 1%	12 - 1.2%

The largest percentage of defects found is always the teeth and tonsils. Then proceeding to the chest examination, here in the vast majority of children we find no disease. Children who are suffering from acute respiratory infection will not be in school, or should not be. When we do find a chest condition we also find that the child's trouble is already well known to the parents, and also the teacher and nurse, and usually the child is under the care of the family physician. We realize that early tuberculosis will not be discovered by the routine school physical examination, but requires a chest plate.

In the records under review three bronchitics and asthmatics were found, and all were under the care of the family physician. Organic heart disease is comparatively rare in the school-age group. Four lesions were picked up and all were known to the parents and under care. Ten orthopaedic cases were noted. These also were known to the parents, and under medical supervision.

These results would tend to show that a large amount of the time spent by the medical officer in examining children in the schools is unnecessary. The school is the logical centre for the public health nurses' activities in her district, and through the children she gains access to the homes in the district. It is our belief that the time she spends in the home is of more public health value than that spent in the schools. Do health talks to the younger grades in the school by the nurse do much good? After all, the teacher has been trained to impart knowledge to the children. Why can she not be trained to impart health knowledge as well as the regular subjects to her pupils?

In Manitoba a specially trained public health nurse is now on full-time duty in the Normal School carrying out this policy of training future teachers to carry on a health program in their classrooms, and also to enable them to recognize common defects and skin conditions prevalent in the classrooms. It would seem that as a result of this policy the public health nurse in the future will be able to spend less time in the schools, and to devote more of her time to district work in the homes.

It has been our experience that we do not get many parents to attend the school examination. We also found that in ordinary defects such as tonsils, the parents have a tendency to put off corrections until the following holidays in order that the child will not miss school, and when that time comes around, we may find the holidays themselves will interfere.

We believe that all children should have an examination in the first

grade, but this should be carried out in the months preceding school, in the health office. Parents should be contacted by the nurses and appointments made. The parent is present at the examination in all cases, and a large percentage of defects are corrected before the child starts school. Here also the opportunity is presented to complete the child's immunizations.

Children above first grade and through high school are given a physical examination by the medical officer on request of either parents, teachers, or nurse, as are also grade repeaters and behaviour problem cases. The High School graduating class should be examined to complete the school record card, and this should include a Schick test and tuberculin test. Those Schick-positive should be given a course of toxoid, and those tuberculin-positive a chest plate.

In summary, we believe that:

1. A physical examination by the medical officer of all children routinely is unnecessary and a waste of the medical officer's time to say nothing of the cost to taxpayers.
2. More emphasis should be laid on the pre-school examinations and the elimination of defects discovered at a time when they are more easily corrected, and before the child enters school.
3. The High School children should have a physical examination before graduation, including a chest plate.
4. Immunization programs against those diseases that can be so prevented should be emphasized in the school health service.
5. The teachers should be encouraged to become more health-minded, and realize that in a very large measure they share in the responsibility of the school child's health.

SCHOOL HEALTH INSTRUCTION

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AN educated person is expected to possess sound information concerning health and disease, and to work towards the protection and improvement of his own health and that of his family and community. Opportunities are numerous in the school to promote the health of pupils. The conditions of the environment in which children are called upon to live, their efforts to solve their individual and collective health problems, their learning of facts and principles of personal and public health, lead them to acquire habits and develop attitudes that assure better living in better health, in all of its aspects —moral, social, emotional, mental, and physical.

The school, being largely responsible for the training of childhood and youth, has accepted education in health as one of its formal and inescapable duties and objectives. But there remains some degree of confusion as to aims and responsibilities, as to ways and means.

Health instruction is the province of the teacher. An occasional talk by a school physician or a few remarks from a visiting nurse, and the best advice

from an athletic coach or a professional physical educator, plus accidenta correlations by teachers of other subjects, will never make up a balanced and comprehensive program of health teaching. The teacher knows how to teach; if she possesses sound health information, she can make the best job of it. She can influence attitudes, form habits, impart knowledge and develop skills in her pupils. Whether she does it by the activity, project or enterprise methods; whether or not she uses the problem-solving approach; whether she gives the old chapters the more fashionable names of units of instruction or adaptation or calls them centres of interest, is none of the hygienist's concern. But he can see that the problem of competence lies at the source of the teaching staff, in normal schools, where student teachers should be trained by school health educators. In the elementary grades, the teaching is necessarily done by the classroom teacher. Besides that, wherever instruction is given by specialists, there should be one in health education.

They could teach in normal schools, they could keep the curriculum up to date and revise it when necessary, and prepare better teaching materials of all kinds (textbooks, guides, visual aids, etc.) They could operate an in-service training program for teachers in practice by organizing institutes and workshops, extension and summer courses, and by writing articles in their professional journals.

We shall not attempt to settle the controversy here whether the program should be adapted to a good series of manuals, or the textbooks should be written to suit the program, but blessed are the teachers and pupils who can make their choice of the splendid teaching aids now available to the English-speaking sections of our school system.

The problem of a specific period alloted to health in the school day is contingent upon many factors among which are: the competence of the teachers, the flexibility or rigidity of the class schedule, the grades under consideration, etc. Until teachers are well trained and able to make health teaching a true education, and as long as they are subject-matter-conscious, they need a period for this instruction. To rely exclusively on the accidental correlations with other teachings and regular activities, is to invite neglect or inadequacy.

Nutrition education should be given an A-1 priority over all other aspects of health education. The school lunch should be generalized in all day schools and should be considered a practical teaching procedure with numerous possibilities of incidental training and instruction in many related areas. Although this may sound like a paradox, we can say that if operated strictly at cost, a school lunch program is the best investment any school or school system can make.

Junior Red Cross is well developed in our schools. Any branch is usually what the teacher makes it: it can be a money-collecting agency with emphasis on international friendliness and participation in activities of the parent Red Cross, or it can be primarily an effective school health club with active promotion of health rules and their practice by pupils in their daily lives, as well as an organization for the treatment of handicapped children from indigent families. I assume that principals are in a position to give the correct slant to the program of branches according to local needs.

PREPARATION OF THE TEACHER FOR HEALTH INSTRUCTION IN SCHOOLS

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IN the course of this discussion several have said that the responsibility for health instruction in the school rests rightly with the teachers. Others disagree because already the teacher is too busy. Health instruction requires no extra time in the school program. It does, however, require better preparation of the teacher.

It should be remembered that health instruction does not mean simply formal instruction. It means health in the entire life of the school and community; healthful living conditions in home and school, knowledge of the normal child and his development, intelligent observation of deviations from the normal, the health of the teacher, a happy, helpful relationship between teacher and pupils and an appreciation of school health as a part of the life of the entire community.

In most places some attempt has been made to prepare the teacher for her part in health instruction. However, in few places has the preparation been adequate. In some teacher-training schools this phase of the teacher preparation is delegated to one member of the staff who may be an instructor of home economics, physical education, science, or perhaps a public health nurse. Those teachers who receive their professional training in university colleges of education often receive very little, if any, preparation for health instruction.

The time has come when all persons concerned should get together in an attempt to solve this problem. Instructors in Normal Schools should be fully aware of the broad interpretation of health instruction. They should appreciate how the health of the school fits into the general pattern of the life of the community. A health committee, composed of the principal and the instructors of science, social studies, home economics, physical education and a public health nurse who is an instructor in health, meeting regularly to discuss health matters could incorporate health naturally into the entire life of the school. The public health nurse also could link up the school with the health and welfare of the community. Were this plan adopted in the preparation of all teachers, it would serve as a real demonstration for the teachers to carry over into their own schools.

In-service assistance should also be given the teachers in the field. Taking part in this program would be the medical profession, health educators, sanitary engineers, public health nurses and superintendents of schools. There should be complete understanding on the part of all of these persons as to what is expected of the teacher and what has been her preparation.

If the responsibility for health in the schools is not to be passed from one to the other, resulting in ineffectual health instruction, the time has come when something very definite must be done; first, to provide adequate preparation for the teacher and then to provide trained personnel to help in the continuing education of the teachers in the schools of our communities.

SOME PRINCIPLES OF A GOOD HEALTH PROGRAM

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I HAVE been asked to describe the elements of a good school health program. What I shall attempt to do is to give principles which I believe are important as guides in the development of a school health program. I would list eight cardinal principles under this heading:

1. Recipients of Services Should Share in the Planning

One general principle which can be said to apply to all aspects of the program is: the recipients of the services should be consulted, as far as practicable, in the planning of these services so that they know *why* we have health programs and that they share the responsibility for them. It is astonishing how often this simple, yet fundamental principle in democratic administration is overlooked.

We have not made clear to our youth why we have health programs at all. We have not consulted them in the development of our programs, nor have we convinced them that they share the responsibility for our programs.

2. Cooperation Between Education and Public Health

Health departments are involved in the business of school health. But so are education departments. And whatever service is rendered by health departments to school children while they are in school involves the school administration. The schools include about one-fifth of the total community population and everyone has had contact with the schools. The school is the only agency employing trained educators in ratio of one to every 40 individuals in the population reached. Moreover, the school is another avenue to the home. The public health department knows the health problems of the community, the health facts, and the health resources. Why should the health officer overlook the possibility of enlisting this educational force in support of health department objectives?

A growing number of health officers and school administrators are aware of the necessity of getting together not only to understand each other's point of view but also to discover the help that one can be to the other.

3. Preparation of Personnel.

This is the third principle which I consider basic to a good school health program, namely, preparation of personnel. It cannot be repeated often enough that our programs are only as good as the people who carry them out. It is essential that appropriate pre-service and in-service education be provided for school administrators, teachers, nurses, physicians, dentists, and other specialized health personnel serving the schools.

Furthermore, supervisory personnel is necessary in order to carry out the administration and continued development of the program. Physicians doing school work need the leadership and guidance which good medical supervision can give. Except for some urban communities, this is woefully deficient everywhere.

4. Medical Relationships

The fourth principle which, in my opinion, underlies good school medical service, is medical relationships. Our school work in this country had developed with the case-finding or examination program considered as the responsibility of the school physician and treatment the responsibility of the community physician.

Here is what the school can do to help improve medical relationships:

Develop in those who provide the treatment services understanding and cooperation regarding the case-finding work in the schools.

Create confidence on the part of the practitioner in the school's medical findings.

Provide pediatric and other consultative services for the practitioner.

5. Participation of the Community Physician

A fifth principle which is a logical development at this point is the greater participation of the community physician in case-finding or the medical examination. We have mentioned the gap which exists between finding the case and securing treatment and some ways of bridging it have been suggested. There is another way of closing the gap. That is to have the school examination done by the community physician. Many school systems have rejected this idea, some on the grounds that if the outside physician is encouraged to participate, the school physician will not have a job; others on the basis that the former's examination is not so carefully done as the school physician's. But many children have had some medical attention prior to entering school. Therefore, why not encourage the family to use the physician to whom the child may be already accustomed and who, under these circumstances, may know far more about the child's health than the school physician is likely to learn from the brief contact with the child in school? If treatment is needed, the child is already at the treatment agency and time would be saved in follow-up. Furthermore, if the physician carried a part of the examination load, the school physician will be released for more advisory service to principals and teachers in the schools.

6. School Shares Responsibility

And this brings me to my sixth principle. The school shares the responsibility for the health of children. We must not expect that the school can or should carry all the reponsibility for the health of children of school age. It shares this with the home and the community. The sixth principle underlying good school health programs, then, is "the health of the school child is a shared responsibility of home, school, and community."

7. Health Education is the Soul of Prevention

A seventh principle—one that we have been slow to apply but which I am glad to say is gaining wider application—is that health supervision of the child in school, to be effective in his daily life, must exist in the classroom. We cannot rely for health supervision upon occasional school medical examinations—no matter how frequently they are done during the child's school career. Health supervision, to be effective, must be a daily, constant activity on the part of teachers.

8. Health Education

This is my final basic principle for a good school health program. Good health is more than the correction of physical defects. If anything is to be accomplished in school health programs, we must know more about the physical, emotional, and environmental condition of the children in our schools. This means better medical examinations with parents attending for the younger children. It means more intensive and planned follow-up based on knowledge of the child's problem and what can be done. It means providing an environment, in the school at least, where the child has an opportunity to practise and experience an optimal living atmosphere not only as regards the classroom, but in respect to food, sanitation, safety, and other elements of the environment. It means that, as children advance in school, they should have increasing responsibility for maintaining this environment.

It means, if the school believes that health is a prime goal of education, that parental education is a necessary part of the education of the child. Parents should know what the school is trying to teach the child because in no other aspects of the curriculum are the parental influence and home factors of as much importance as in health teaching.

THE CURRICULUM ON HEALTH

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Toronto

HEALTH should not be regarded simply as a subject of the curriculum, but as a program pervading the whole life of the school and the whole life of each child. The teacher should impart knowledge that forms a basis for understanding why proper health habits are desirable. Habits are the result of doing; they are not formed as the result of reading and talking. Instruction in health, therefore, should be active rather than formal and linked closely with the child's daily experiences. The food he eats, the clothes he wears, the games he plays, the home where he lives, the school he attends, are all related to a child's health and growth. The animals, the birds, the trees, the flowers, that live and grow with a child, suggest parallels to his own health needs. These should form the basis of a school health curriculum. Through records of growth in health and weight, through daily appraisal of health and cleanliness, through experiments, enterprises and excursions, the health program becomes real and effectual.

Grade I and II children are interested in home, family, pets, etc. Advantages may be taken of these interests in providing activities of value in health teaching.

Grade III and IV children are interested in the community, in children of other lands, and these interests should be used as a basis for learning how other people keep healthy.

Grade V and VI children should be instructed in nutrition and the emphasis should shift to reasons underlying health practices.

The senior grades should cultivate a general interest in their own personal health and in measures taken by communities for safeguarding the health of the public. This interest should be based on a knowledge of scientific principles underlying health practices and should manifest itself in a genuine zest for healthful living.

The school environment is an important factor in promoting physical and mental health. Frankly I am not anxious to inquire closely into formal lessons in health if I find an active, healthy teacher, aware that attention should be paid to the physical properties of the classroom, who knows that children will work best in a temperature of 65-68 degrees, who knows the values of cleanliness, ventilation, adequate lighting, hand washing, and who understands the practices of good housekeeping in the classroom and zealously carries them out.

CERTIFICATE IN SANITARY INSPECTION (CANADA)

Since 1935 provision for the certification of sanitary inspectors in Canada has been made by the Canadian Public Health Association. Candidates who complete the requirements of the Association, including examination, are granted a certificate of competency: the **Certificate in Sanitary Inspection (Canada)—C.S.I.(C.).**

The educational requirement for registration is junior matriculation or its equivalent in secondary-school work. Candidates must also have had experience in all branches of sanitary inspection.

The 1948 examinations will be held in the various provincial centres on September 15, 16 and 17. The closing date for accepting applications from candidates who have not served as sanitary inspectors for at least one year will be March 15. Candidates who have been employed for this period may make application up to August 16.

To assist candidates in their preparation for the examinations, the Association offers a correspondence course. The 1947-48 session will open on October 27.

A syllabus outlining the subjects of the examination and the requirements for registration may be obtained by addressing the Secretary, Committee on the Certification of Sanitary Inspectors.

CANADIAN PUBLIC HEALTH ASSOCIATION

150 College Street, Toronto 5

The Public Health Nursing Services in England

DAME KATHERINE CHRISTIE WATT, D.B.E., R.R.C.
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THE National Health Service Act passed by Parliament in 1946 has not yet come into operation but will do so on April, 1948*. You will appreciate, therefore, that this is a time of great activity in public health and hospital circles in my country where many discussions and negotiations are taking place in regard to the provision of a comprehensive health service for all. We have a year of preparation before the wheels of this immense new machine must begin to revolve and much detail yet remains to be settled. You will therefore understand that throughout this address I can only refer in broad terms to the changes in the public health nursing world that will take place, because much depends upon the manner in which County Councils and County Borough Councils who are to be the future Local Health Authorities will develop their local schemes, under the rather broad terms laid down in the Act.

Our system of administering public health in England is a complex one because different parts of the service are administered by varying local authorities and voluntary organizations also play a part, particularly in regard to the social services.

At the head of the Ministry of Health, covering England and Wales, is the Minister responsible to Parliament, and in the permanent service of this large state department are thousands of civil servants responsible for seeing that legislation is put into effect and properly administered. The Ministry of Health is important because it deals with services which affect the life of every citizen and on which the health and happiness of the whole nation depends—such services as housing sanitation and the medical, nursing, midwifery and social services.

During the war, a Division of Nursing and Midwives was established, it being found necessary greatly to increase the nursing personnel on the staff. The professional side of the Division is responsible on professional matters to the Chief Medical Officer of the Ministry, and is headed by the Chief Nursing Officer. A great many of you have met Sir Wilson Jameson, and will realize how fortunate the Chief Nursing Officer is to work with him. The Division at headquarters is advised by the Chief Nursing Officer with two deputies, and in each of the Regions into which the country has been divided there is a Public Health Nursing Officer and a Hospital Nursing Officer. The Chief Nursing Officer is consulted from within the Ministry and from without on matters con-

Presented at a joint session of the Canadian Public Health Association and the Conference of State and Provincial Health Authorities of North America, held in the Château Frontenac, Quebec, May 20-22, 1947.

*Postponed until 5th July, 1948.

nected with the many aspects of nursing. She represents the Ministry of Health on the General Nursing Council—the statutory body responsible for the training, examination and registration of nurses, whilst one of the deputies sits on the Central Midwives Board—a similar body dealing with midwives. In addition to general advisory work and service on committees, many personal problems and requests are dealt with, including the selection of candidates for Government grants for further training, e.g. Health Visitors training.

The Ministry's Nursing Officers in the Region undertake advisory work and inspections of many types including those of Nurseries, Child Welfare Centres, foster children, Maternity Homes and institutions for the care of the sick and aged.

The midwifery field is one where our services differ widely from those in Canada. As you will know, a large number—indeed, over 60 per cent—of normal confinements in England are attended by a midwife without a medical practitioner. To become qualified as a midwife a nurse must undergo a further period of training covering a year, subsequent to which, if she passes the examination, she is enrolled by the Central Midwives Board. She may then practise either in hospital or in the domiciliary service. We have at the present time 15,400 practising midwives in England and Wales, and a far larger number of persons qualified to do so but not practising.

The larger local authorities are responsible for providing the domiciliary service of midwives in their area, which they do either by employing the midwives themselves or by arrangement with voluntary District Nursing Associations. We estimate that a midwife working full-time in an urban area should undertake approximately 60 cases a year, but in rural areas where the work is frequently combined with home nursing of the sick and also with health visiting, the number of cases she can undertake is, of course, considerably smaller. At the present time, our midwives both in hospital and in district practice are seriously overworked owing to a greatly increased birth rate and to a shortage of personnel. Under the new Health Act, the domiciliary service will continue along much the same lines, though in hospitals which next year will be State-owned, midwives will have a new employer.

An ancillary service which we are trying to expand is that of home and domestic helps. Local authorities are being encouraged to recruit on a full- or part-time basis numbers of local women prepared to work for about 1/7d. an hour on domestic duties in the homes of those who are aged or sick, or where the mother is in bed following confinement. Such a service is much needed because domestic help is difficult to come by through private channels. In some areas where an efficient home-help organizer is at work, an organized scheme has taken on well and, contrary to expectations, a number of women, some of them employed in factories during the war, have been persuaded to take up work of this nature, particularly when it is presented to them as being a social service to the community. The duties they are asked to perform include cooking, cleaning, looking after young children and shopping. Maybe you do not know what queues are in Canada, but in England we have had experience of these irksome inevitabilities, and shopping is still a long and tedious affair which old persons

or those in ill health are unable to stand up to. A home help is therefore a great boon.

I should like now to occupy a few minutes telling you of another branch of public health work that expanded tremendously during the war, namely that of day nurseries for children of all ages up to 5 years, and of nursery schools for those aged 2 to 5 years. We have over 900 day nurseries and 300 nursery schools in England and Wales, in addition to many nursery classes in primary schools for children 3 to 5 years. The expansion was, of course, due to the need during the war for women to be employed in industry, which has in no way decreased because of England's need to build up her export trade. During the hours the children are in the nursery or nursery school they are provided with balanced meals, milk, cod liver oil and orange juice, whilst a suitable program is arranged to give them the training, rest and play that they require. Every precaution is taken to guard against the spread of infection amongst these children of tender age.

Training of nursery nurses is undertaken in the best of these nurseries and nursery schools. This consists of two years' training, approved jointly by Ministry of Health and Education, including instruction in general educational subjects alongside those of vocational interest. At the end of the course the girls sit for a National Nursery examination and subsequently take posts of some responsibility in the nurseries or in private families.

I wish very much that I had more time to spend in Canada in order that I might be able to see something of the excellent public health work you are doing, particularly in regard to the teaching of student nurses in public health in which you have been pioneers. If the time was available, I should no doubt discover that in the factories industrial nursing is playing an increasingly important part, as it is at home. We have as yet no special requirements in regard to the qualifications of those engaged in industrial nursing but the Royal College of Nursing has arranged a course extending over a period of 6½ months which is open to State Registered nurses. I cannot give you an accurate estimate of the number of industrial nurses employed, but it is probably 6,000, of whom 3,400 are State Registered nurses. The employment of adequately trained nurses in industrial undertakings is spreading, and interesting developments are hoped for in regard to big national undertakings. For example, we should like to see industrial nurses employed by the National Coal Board and the Transport Board.

In the United States of America and in Canada, I have little doubt one hears the same discussion going on as in England concerning the extent to which public health nursing activities should be carried on by specialist nurses or whether the duties should be generalized. We adopt both methods. The generalized service tends to develop in the rural areas where one nurse may undertake all or a combination of the duties of midwife, health visitor, district nurse and school nurse. In the big cities, it is more common to find separate groups of nurses performing the specialized duties, a system which is open to the criticism that it involves duplication of visits; there are, however, distinct advantages because one branch of the work does not, in an emergency, take pre-

cedence over another, as it tends to do in a generalized service, particularly where midwifery is included. In favour of the generalized program, it can be said that the nurse who performs bedside nursing or midwifery in a home is the most acceptable teacher of health measures by reason of the fact that she is in a position to get across the principles of health at an impressionable time, namely, when she is engaged in rendering practical service. As in the other fields of nursing, we are suffering from a shortage of health visitors, partly due to the overall shortage of nurses but more particularly to an increased demand which will be still further increased next year under the new act. The Clause in this Act relating to Health Visitors says: "It should be the duty of every Local Health Authority to make provision in their area for the visiting of persons in their homes by Visitors, to be called Health Visitors, for the purpose of giving advice as to the care of young children, persons suffering from illness and expectant or nursing mothers, and as to the measures necessary to prevent the spread of infection. The duty of the Local Health Authority under this Section may be discharged by making arrangements with voluntary organizations for the employment by those organizations of Health Visitors or by themselves employing Health Visitors." The Health Visitors is primarily a health teacher and her work up to the present has been mostly with mothers and young children under five years of age. Her duties have included ante-natal care of the mother, the home visiting of mothers and young children under five years of age, the supervision of all children nursed out with foster mothers, and assisting if required with the practical instruction of students undergoing training as Health Visitors and with the supervision of home helps. Last year we had a total of 5,800 Health Visitors in England and Wales, some of them employed full-time on health visiting, and others combining the work with district nursing or midwifery.

The purpose of the Clause in the new Act which says: "Advise in cases of illness" was framed to promote closer liaison with the general practitioner, but when the doctors found these words in the Act, they expressed the fear that the Health Visitor was to be turned into a pseudo doctor to make a diagnosis, although of course nothing of the kind was intended. The district nurse also raised her voice, fearing her duties were to be encroached upon, but she, like the doctor, has nothing to fear from the Health Visitor in this way.

The training of Health Visitors is undertaken at rather more than a dozen training centres, some of which are administered in conjunction with a university. It is a six months' post-certificate course at the end of which the candidate sits for an examination conducted by the Royal Sanitary Institute. The certificate is a statutory qualification and only person who hold this certificate may be employed as a Health Visitor except with a special dispensation from the Ministry of Health. The Health Visitor must also have undertaken Part I of the training arranged by the Central Midwives Board although she need not be a State Certified Midwife. We have for some time been wishful to extend the course to nine months in order to include more instruction on child psychology and the social services but are unable to do this at the present time owing to the shortage of nurses. A further reason for postponing the decision is that the Minister is awaiting a report from a specially established working party

set up to examine the methods of recruitment and training of nurses, and it would be injudicious to make radical changes before the recommendations of this working party are made known.

As I have said earlier in my remarks, school nursing may or may not be combined with health visiting. School health work is administered by the education authorities but in almost every area there is a degree of co-ordination by reason of the fact that the Medical Officer of Health of the area is also the School Medical Officer. The lead in this respect is given from the top, the Chief Medical Officer of the Ministry of Health being also the Chief Medical Officer of the Ministry of Education. This sounds very simple and satisfactory, but when I tell you that the areas to which the local administration of the Education Act is to be assigned are not necessarily the same areas as those for health, you will understand that it is anything but a simple arrangement, but in the future it is anticipated that some of these complexities will disappear.

I have not yet said anything about the future of district nursing which, as you know, since its inception has been on a voluntary basis in Great Britain. The central and largest organization is the Queen's Institute of District Nursing—sister to your Royal Victorian Order.

Throughout the country district nursing has been organized by local committees, with generally a County Nursing Association to co-ordinate and advise. Of these County Associations, all but seven are affiliated to the Queen's Institute. The District Nursing Associations have supported themselves by raising voluntary funds, by provident schemes and by patients' payments. In the future, however, district nursing is one of the services provided under the National Health Service Act; and having made his weekly contribution to the State under the insurance scheme, John Citizen will then be entitled to call upon the services of the district nurse in return for what he calls his "stamp". Calls will therefore increase in number. Local health authorities are now preparing their schemes for providing a home nursing service, which they can do either by employing nurses themselves or by making arrangements with existing voluntary associations. It is anticipated that certain authorities will choose the latter course whilst others will submit schemes to the Minister of Health saying that they intend to employ the nurses themselves. You will readily appreciate that there is apprehension in district nursing circles at the present time because of these impending changes.

I have tried in the time available to give you a bird's-eye view of our existing services and have very briefly touched upon changes, some of which will take place next year, but it has been necessary to leave gaps. From what I have said, you will realize that we have our difficulties, some of which no doubt exist in Canada, but difficulties were made to be overcome. If, as I believe, some of them are common to both countries, then we may be able to help each other in resolving them. For this reason, and also for the pleasure it would give us, I hope many of you will visit England, see for yourselves our shortcomings, and then give us the benefit of your advice and experience. I can assure you of a very warm welcome.

Nutrition in War and Peace

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IT is a privilege to be invited to appear before the State and Provincial Health Authorities of North America in this historic city. It is also an unusual opportunity and a heavy responsibility—an opportunity to explore with you new vistas in the promotion of human health and welfare, and the responsibility of doing justice in a brief address to a most important and complex subject.

Let me begin by trying to create for you something of the atmosphere of the early 1930's when the world witnessed the spectacle of hunger and malnutrition among vast numbers of unemployed workers and their families while the world's granaries were bursting with food that could not be sold. Food surpluses haunted the minds of leaders in government while bread-lines formed below their windows and the unemployed sank lower and lower into misery. Governments bought up food surpluses, dumped them abroad, denatured them so that they would be unfit for human use or destroyed them. In these circumstances, the outbreak of a Second World War could not have come as a surprise to the most casual student of world affairs.

It was at this time that delegates to the League of Nations, together with League officials, launched what came to be known as the world food movement, designed to release the economic jam by emphasizing that adequate diets were essential to human health, and that in supplying the raw materials for such diets, agriculture throughout the world would rise from its depression and in rising carry with it the industries needed to supply farm machinery, fertilizers, housing, roads, marketing equipment and other essentials for agricultural rehabilitation. It was the belief of many that had this movement been started early enough the train of events leading to the Second World War might have been halted. But the current was moving too swiftly, the world was on the brink of catastrophe, and soon plunged into the Second World War.

To-day, for the second time within a generation, we stand at the crossroads, one road leading to freedom from want and freedom from fear, while the other leads through nationalism and isolation to a third and perhaps final world war. The world situation to-day resembles so closely that which confronted us after the First World War that it would appear as if some Higher Power were saying to us: "I hope you have not forgotten your lesson for I am giving you another chance, and on your present choice will depend the fate of your civilization."

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Sir John Orr has said that every advance in knowledge which gives us new powers over nature inevitably brings about changes in the structure of our society. A good example is the invention of the printing-press, which was followed by the spread of new ideas about the dignity and the rights of man. When the society of that day refused to accept the new ideas, there followed the American and French Revolutions. History teaches that those who resist these changes always lose in the long run, and because of the resistance changes come violently rather than peacefully, through revolution rather than evolution. Nowadays knowledge is increasing so rapidly that we are hard put to it to keep track of the advances even in a single field of science. Moreover, the changes brought about by this new knowledge, which once were local or national in scope, now are felt throughout the world because of the great advances in transport and communication.

In the drama of solving problems in the field of physical science, we tend to forget that during the last thirty years advances in our knowledge of biology have been even more rapid. This new knowledge is potentially just as dangerous to our society as our ability to manufacture rockets or atom bombs. Biology has taught us how to multiply the production of food from a given acreage; by using this new knowledge a few men on a few farms in a few countries have increased the world's food production during every decade in the last two hundred years. By using the new methods on a wider scale, enough of the right kinds of food can be produced to nourish every inhabitant of the earth. And while we have learned to produce an abundance of food, our knowledge of human nutrition has increased so that we understand something of the important relation of food to health. The best fed peoples of the earth live longest, have the greatest physical and mental energy, possess the most abundant health and the greatest enjoyment in life. In view of our ability to produce enough of the right kinds of food to feed the population of the world, and in the face of our knowledge that the best fed peoples are the most healthy and prosperous, can our society endure once again the spectacle of two-thirds of the world's people malnourished or starving while food surpluses pile up or are destroyed?

These considerations bring up political, social, and economic questions of the most complicated character, and you may well ask, what have health workers to do with these ideas? The answer is simple: we as physicians and health officers have undertaken the responsibility for maintaining health and preventing disease among the populations under our care. It is our business to keep abreast of the stream of new knowledge, and to weave into the pattern of our work the new methods and technics placed in our hands by advances in the natural and social sciences. In no other field of science has our knowledge advanced more rapidly than in nutrition. The earlier and much of the recent work has been done with animals, whose environment can be readily controlled and whose life-span is short enough so that the effects of the different nutrients can be observed in a few years over several generations. For these reasons we know far more about the influence of nutrition on laboratory and farm animals than we do about its effects on human beings. But man too is an animal, and by analogy we can transfer to man the results of carefully controlled animal experiments. In recent

years an increasing number of human studies has been undertaken, and these have served to confirm the results of animal studies and to emphasize that the beneficial effects in animals of more adequate diets may be equalled or surpassed by the results in man. We know from animal experiments that adequate nutrition insures good litters, and that certain deficiencies in the diets of pregnant females will bring a large and fairly constant proportion of congenital anomalies. We know that a diet which will keep rats in good health for generation after generation, reproducing normally, and living out the normal life-span, may give even better results if extra amounts of certain nutrients such as vitamin A are added. On the improved diet the rats will mature more quickly, attain greater stature, remain longer in the prime of life and live a longer life by about 10 per cent, equivalent to seven years in the human life span.

H. C. Sherman, who conducted some of these experiments, has this to say of the potentialities of better nutrition in human beings:

> To a much more important extent than had been supposed, we build our own life histories by our daily use of food.
>
> Through wiser choice and use of food we can build our own and our children's health to higher levels.
>
> It is no exaggeration, it is a simple summary of scientific fact, to say that our new knowledge of food and nutrition brings us a new order of mastery of our life processes, and thus of our life histories.
>
> In fact, what has recently been learned of the relations of food to health constitutes one of the major scientific advances of our times.[1]

These statements of Sherman received dramatic illustration in the United Kingdom during the war just ended; every health officer should be familiar with the story.

In 1937 there appeared in Great Britain under the title FOOD, HEALTH AND INCOME a report on adequacy of diet in relation to income. The report was based on a survey of 1,152 family budgets, selected so as to constitute as representative a sample as possible. The conclusions of the report caused shocked surprise and aroused antagonism. Fortunately, when criticism and questioning had ended, action followed,and a far-reaching program for better nutrition, particularly of low-income families with children, was adopted and carried out.

The lessons of this survey were so impressive, and the memory of the First World War when the British people were threatened with starvation so vivid, that when war broke out in 1939, the Government took steps to carry out a food and nutrition program which would provide for all the people the food needed for their health and working capacity. A scientific advisory committee on food and nutrition policy was set up by the Cabinet, to which it reported directly. Its recommendations may be summed up in a sentence: Everyone, without regard to income, should be supplied with food according to his or her physiological needs. This policy was put into effect and carried out along the following lines:

> A system of rationing was enforced, based on the principle that all the essential nutrients, even if in short supply, should be

[1]Sherman, Henry C.: FOOD AND HEALTH. New York: The Macmillan Company, 1947.

equally available to everyone to the extent necessary to maintain health, and at controlled prices.

Some common foods such as bread and potatoes were left unrationed, so that the differing requirements of human beings could be met by the individual.

For nutritional and transport reasons, bread was made from 85 per cent extraction flour instead of the usual 70-72 per cent extraction.

Expectant and nursing mothers, infants and school children were assured of an optimum diet regardless of their purchasing power. This meant that these groups had priority in the supply of such essential foods as milk, eggs, and fruit. Cod liver oil and foods rich in ascorbic acid were also provided for these groups. School meals were made available in all the schools. Over a million and three-quarters of these were served in 1945, this amounting to 36.3 of the total school attendance.

By the end of the war three-quarters of all school children were receiving milk at school either at one-third of the market price or free. For adolescents working in factories so-called National Milk Cocoa was made available at a nominal price.

Margarine was fortified with vitamins A and D, calcium was added to flour and vitamin D to dried milk.

The well-to-do could buy extra meals in the regular restaurants; and to equalize the position and provide for the greater needs of working people, British restaurants were set up where substantial meals of nourishing food could be obtained at cost. Similar provision was made for factories, and in those which employed 200 or more workers employers were required to provide canteens or cafeterias. Special arrangements were made for the inmates of institutions and for invalids. The essential feature of the whole scheme was that each individual, regardless of income, had a right to the food necessary to maintain his health.

Having made the best possible plans to feed the people adequately, the next step was to control the effect of the plans to see that they were working out properly. For this purpose a complete system of dietary, weight and clinical surveys was inaugurated. Dietary surveys revealed whether representative samples of the population were receiving adequate diets; weight surveys showed whether the calorie content of the diet was satisfactory, and clinical surveys the presence or absence of nutritional deficiences.

In the program to maintain the health of the entire population by means of adequate diets, two other factors deserve special mention. One was the setting up of a Ministry of Food which had control of the production, import, pricing and distribution of food, and the other a systematic campaign of education in nutrition. Time does not permit me to more than mention these factors.

What have been the results of the wartime policy respecting food and nutrition in the United Kingdom? I give them to you in the words of Sir Wilson Jameson, Chief Medical Officer of the Ministry of Health, and of Dr.

H. E. Magee, Deputy Senior Medical Officer of Food, Dietetics, and Nutrition. Here is the story as told by Sir Wilson Jameson in December, 1944:

> "After five years of war we still have a good story to tell. The most sensitive index of a nation's general health is probably the proportion of infants dying in the first year of life. In the last war it rose steadily. During the last three years it has declined steadily and last year, was the lowest ever recorded. The most risky time for a baby is its first month of life. Well, we've got a new low record there; and as for the tragedy of babies born dead (stillborn as we say) I can tell you that the chance of this happening is only three-fourths of what it was five years ago. The death rates for children up to ten years of age were last year the lowest on record, as was also the proportion of mothers dying as a result of their confinements. As the war has gone on, the vital statistics for mothers and children have continued to improve and in the fifth year they're the best we ever had. This can't be just an accident. All that's been done to safeguard mothers and children must have had some effect—such things as the national milk scheme, vitamin supplements for mothers and children, the great extension of schemes for school meals and milk in schools. There are doubtless other factors—full employment and higher purchasing power in many families, especially in the old depressed areas; as well as the careful planning from a nutritional point of view of the restricted amount of food available for the nation."

The following is quoted from a lecture by Dr. Magee in 1946:

> "The war-time food policy was the first large-scale application of the science of nutrition to the population of the United Kingdom. . . . A diet more than ever before in conformity with physiological requirements became available to everyone, irrespective of income.
>
> "The other environmental factors which might influence the public health had, on the whole, deteriorated under the stress of war. The public health, so far from deteriorating, was maintained and even in many respects improved. The rates of infantile, neonatal, and maternal mortality, and the stillbirth rate reached the lowest levels ever. The incidence of anaemia declined, the growth-rate and the condition of the teeth of school children were improved, and the general state of nutrition of the population as a whole was up to or above prewar standards. We are therefore entitled to conclude that the new knowledge of nutrition can be applied to communities with the expectation that concrete benefit to their state of well-being will result."

In view of these results it is no wonder that Sir Wilson Jameson has

come to the conclusion that "Nutrition is the very essence and basis of national health."[2]

The great progress which has been made in public health work during the last forty years has been based largely on the work of Pasteur and his disciples, who taught us the specific causes of many of the diseases which constituted the chief health problems in the nineteenth century. If public health work is to win new triumphs, its achievements must be based in future on advances in our knowledge of biology, particularly as these relate to man's dietary requirements, and the influence of good nutrition on health. The influence of this store of new knowledge is being felt throughout the world. It was responsible for the insertion in the Atlantic Charter of one of the four freedoms: freedom from want. It led to the establishment of the United Nations Relief and Rehabilitation Administration, the Food and Agriculture Organization of the United Nations, the International Emergency Food Council, and the International Children's Emergency Fund. One of the most important problems facing the United Nations today is that of adapting agricultural production, economic and fiscal policy to a world in which the fear of unsaleable surpluses of food exists side by side with hunger and malnutrition among something like two-thirds of the world's population. There will be, there can be no political security, no peace in the world until this problem is at least on the way to a reasonable solution. We, who are devoting our lives to public health careers, may shrink from stepping outside of our accustomed role. But in the world as it exists today, every profession which has something to contribute to the stability of society, has responsibilities which cannot be evaded. It is the task of professional health workers to keep abreast of the advances in biology, and to devise the mechanisms—the ways and means of utilizing these advances for the promotion and maintenance of the public health. In the face of the experience I have cited, health workers can no longer be content with desultory programs of education in nutrition and superficial systems of medical inspection of school children. In the modern state, lack of income is no bar to immunization against smallpox and diphtheria. The maintenance of a good state of health, which is one of the results of an adequate diet, is surely no less important than the prevention of specific diseases.

I cannot in the limits of this paper describe a complete public health program in nutrition even if I were qualified to do so. Such programs must be evolved by experience and adapted to the conditions and needs of particular regions. But I can point to successful war experience in the field of nutrition and suggest that the most useful items in that program should be maintained in peace time. Some of the agencies in the wartime program of food and nutrition which deserve to be retained are the following:

1. *National Food Administrations*

The Ministry of Food in the United Kingdom has done notable work in the field of what has come to be known as food management. In the United

[2]On the State of the Public Health During Six Years of War. Report of the Chief Medical Officer of the Ministry of Health, 1939-45. London: His Majesty's Stationery Office, 1946.

States of America experience during the war revealed the need for a War Food Administration and one was finally set up, but it has been discontinued. In many countries much of the work of a food administration is carried on by the Ministry or Department of Agriculture. But the Department of Agriculture, like the individual, cannot serve two masters. Farmers are its clients; the emphasis is, naturally and properly, on the needs of agriculture, whereas the food administration is concerned with all consumers. Briefly, it is the task of a national food administration to see that the food needed for the health of the people is provided, either by indigenous production or import, at prices the different income classes can afford to pay. The food administration should be guided by the national department of health, which will determine dietary standards and, by appropriate dietary and clinical surveys, keep its finger on the pulse of the people in so far as nutrition is concerned.

2. *National Nutrition Committees or Councils*

On the proposal of an advisory committee set up by the League of Nations before the war many governments set up national nutrition councils or committees. These consisted of high representatives of the different government agencies concerned, together with university scientist and consumer representatives. It was the business of these councils to advise the governments on nutrition policy. The final responsibility for such policy rests upon the government, but it is of great advantage to the government to have the views of independent persons who are not subject to the pressures which every government agency must bear. The secretary for health, chief medical officer or national health commissioner is usually the chairman of such a council. A National Nutrition Council did useful work in Canada during the war, and in the U.S.A. this function was performed in a limited way by the Food and Nutrition Board of the National Research Council.

3. *Division or Bureau of Nutrition*

Every national health administration should have a division or bureau of nutrition, headed by a physician with special training and experience in biochemistry and clinical nutrition. Such a division or bureau should also be set up in large city health departments, and perhaps in states and provinces. For work in the field, qualified physicians as well as nutritionists should be employed. But something more than qualified staff is needed; the health officer himself must know enough about nutrition to provide the proper kind of encouragement and support. Therefore, in addition to the training received by undergraduates in medicine, courses in nutrition should be required in all public health schools. It seems absurd that some schools now give degrees in public health to students who have never received any advanced training in nutrition.

So much for some important elements of the organization required to carry out programs of nutrition. As for the programs themselves, the subject is so vast that I must confine myself to the merest outline, emphasizing a few essential activities:

A. Research and investigation are two of the most important items in such a program. Leaving out the kind of fundamental research which advances our knowledge of the science of human

nutrition, I emphasize the need for investigation of the problems which confront the health officer. What is the state of nutrition of his people? How adequate is their diet? Which classes in the community require special attention? These and similar questions can be answered by dietary, clinical and biochemical studies of representative samples of the population. Experience teaches that classes which are under pressure or stress from any cause are most apt to be malnourished. This at once draws our attention to pregnant women, infants, school children, adolescents, invalids, convalescents, and the aging, particularly as these are found among the lower-income groups.

B. In carrying out nutrition programs, a good beginning can be made with pregnant women, who should receive an adequate diet from the beginning of pregnancy. Here it is not sufficient to attempt to educate the pregnant woman in good food habits; if necessary, she should be supplied at public expense with the supplements which investigation shows are necessary to bring her diet up to adequate levels. Many animal and human studies have demonstrated that a good nutritional status during pregnancy will reduce the toxemias, cut down maternal mortality, lessen premature births and greatly reduce infant mortality from this cause. I can think of no better way for the health department of a large area to demonstrate the potentialities of a modern public health program than a campaign to raise the diets of all pregnant women to adequate levels. In Wales during the war the death rate from prematurity, which was at an unusually high level, was reduced to one of the lowest in the United Kingdom.

C. Special attention to the diets of industrial workers is also worth emphasizing. The issue of the last war depended as much on the output of munitions as it did upon the result of military and naval engagements. When this came to be realized in the United Kingdom, in Canada, and in the United States, special machinery was set up to ensure that workers were well fed. In all countries the results were excellent. In the U.S.A., as a result of the campaign, proper facilities were provided in large plants for feeding many millions more than before the war or in the first war years. Industrial feeding programs lend themselves readily to programs of education in nutrition; employers and management cooperate gladly because they have found that the provision of suitable facilities for feeding their workers is an important factor in improving labor relations. Special attention should be paid to workers in the heavy industries whose caloric expenditure is high.

D. A fourth most important item in the program is the school meal. Many children who are entitled to the free schooling provided by the modern state are unable to profit because of their

poor state of health resulting from under- or malnutrition. Numerous studies have shown that well-balanced school meals improve the health, growth, and learning power of the pupils. Students of population suggest that school meals provided at public expense to every pupil would be a proper first step in a population policy designed to offset the declining fertility of Western civilization. In combination with school gardens, the school meal may be used in teaching biology as well as in inculcating good food habits. It is a powerful means of building health into the structure of our society.

I must bring this address to a close before I try your patience too far. My purpose in accepting your invitation was to show you that great opportunities exist for the health officer who undertakes to apply in his district even a small part of the new knowledge of food and nutrition that is now available for his use. The formulation and carrying into effect of a sound nutrition program will bring new life to public health departments; it will widen their scope and increase their influence and prestige. The public health workers concerned will be refreshed by their closer association with the research workers who have made new knowledge available, and whose contribution was never so important to society as it is in this critical age; they will be joining in the attempt to give the public the benefit of advances in science which otherwise would bring critical pressures to bear on our society. Let me close with a quotation from my friend Dr. James S. McLester, who has done so much to make physicians understand the importance of nutrition in medical practice:

> "In the past, science has conferred on those peoples who availed themselves of the newer knowledge of infectious diseases, better health and a greater average length of life. In the future, it promises to those races who will take advantage of the newer knowledge of nutrition, a larger stature, greater vigor, increased longevity, and a higher level of cultural attainment. To a measurable degree, man is now master of his own destiny, where once he was subject only to the grim hand of Fate."

The Diagnosis of Rheumatic Fever and Rheumatic Heart Disease

Part I

JOHN D. KEITH, M.D.

RHEUMATIC fever is in reality a clinical syndrome, the chief manifestations of which are heart disease, arthritis, chorea, and subcutaneous nodules. Why these clinical signs should be associated is not yet clear. However, their relationship is established by their frequent appearance together and particularly because of the development of the characteristic form of heart disease in association with any of the other manifestations. We recognize the clinical entity known as acute rheumatic fever and the chief importance of an accurate diagnosis revolves around the fact that cases in this entity often develop rheumatic heart disease . . . therefore, all cases having acute rheumatic fever should be categorized. Indefinite cases should be rigorously investigated and where it appears likely, but not definite, that they fall into this group, they should be labelled as possible rheumatic fever, and treated as such. Cases that cannot be put into this group and cannot be labelled as any of the other arthritides such as are listed in the New York Rheumatic Association classification might then be classified as polyarthritis of unknown etiology. Both rheumatic fever and rheumatoid arthritis might be called polyarthritis of unknown etiology, but over the past few years an increasing amount of knowledge has accumulated about the pattern of both diseases, and it is now possible in the majority of instances to place a case of arthritis in the proper entity to which it belongs.

During the war it was clearly evident that among the many people interested in rheumatic fever and rheumatic heart disease, no agreement existed on how to diagnose the disease. Each of the three services had different criteria for diagnosis. The problem occurs frequently in general practice, in hospital outpatients and in the routine examinations among school children. In the City of Toronto approximately 25,000 school children are examined annually and the school physician frequently has to make a decision in diagnosis concerning a heart murmur. It may be of functional, congenital or organic origin. So far our most valuable data on the incidence of rheumatic heart disease have come from the school examinations. But useful as these figures are, they lack a standard basis for diagnosis, and cities immediately contiguous may have notable differences in cardiac defects listed. For many pressing reasons the following points in diagnosis are set down. These are not considered to be in any degree a final opinion but are offered as a basis for argument in the hope that more universal agreement may be reached on the diagnostic criteria.

From the Hospital for Sick Children and the Department of Paediatrics, University of Toronto, under the direction of Alan Brown, M.D., F.R.C.P. (London).

The clinical manifestations of rheumatic fever are divided into two groups according to significance (after Jones) (1).

Major Manifestations:

1. Heart disease.
2. Arthralgia.
3. Chorea.
4. Subcutaneous nodules.

Minor Manifestations:

1. Fever.
2. Abdominal pain.
3. Precordial pain.
4. Rashes—with especial reference to Erythema Marginata.
5. Epistaxis.
6. Pulmonary changes.
7. Laboratory findings.
   - Electrocardiagraphic findings.
   - Microcytic anaemia.
   - Elevated white blood count.
   - Increased sedimentation rate.

Each of these headings will be discussed separately.

I. Rheumatic Heart Disease

It would be a great help if the term rheumatic heart disease were used in keeping records instead of a wide variety of terms that are merely subheadings, such as endocarditis, mitral stenosis, aortic insufficiency, etc. If the general term, rheumatic heart disease, was set down first in each case and then the descriptive subheadings, it would be possible to evaluate information collected on death certificates, hospital and clinic records, etc.

Heart involvement is the most important aspect of rheumatic fever and its identification requires special attention. The following subdivisions are presented:

A. Pericarditis.
B. Myocarditis.
C. Valvular disease.
   - Mitral involvement—1. None.
     2. Moderate deformity.
     3. Severe deformity—no narrowing.
     4. Severe deformity with narrowing (stenosis).
   - Aortic involvement:
     - Insufficiency:
       1. Without peripheral signs.
       2. With peripheral signs.
     - Stenosis:
       - Tricuspid.
       - Pulmonary.

D. Enlargement of the heart:
State chambers involved—1. Slight.
2. Moderate.
3. Gross.

E. Congestive heart failure.

F. Electrocardiographic changes in rheumatic heart disease.

G. Possible heart disease. Patients in whom the diagnosis of heart disease is uncertain, but who show abnormal signs and symptoms referable to the heart.

The criteria for making a diagnosis of any of the above pathological states in rheumatic fever are laid down in general terms in the booklet on nomenclature, etc., by the New York Heart Association (5). In rheumatic fever, certain specific problems arise and, for that reason, the following comments are set down as additional guides in nomenclature and diagnosis from the clinical point of view.

A. *Pericarditis*

1. A to-and-fro friction rub at base of heart or over precordium.
2. A grossly enlarged cardiac shadow in X-ray which shows marked diminution in size over one month.

Pericarditis is most commonly diagnosed in rheumatic fever by hearing the friction rub characteristic of the fibrinous type. It is superficial, scratchy and heard over the precordium, especially near the sternum. It has a to-and-fro character. Sometimes it is limited to systole or diastole. It is accompanied by fever, and leucocystosis as a rule, and sometimes by abnormal ST, segments and T. wave in the electrocardiogram. A rheumatic friction rub tends to last longer than the rub due to the pyemic infections. However, a friction rub may continue after fluid or pus is formed, and the length of time the rub persists is of limited value in making a diagnosis.

A feature that is frequently noted in children with rheumatic pericarditis is the slight amount of pain they experience. Sometimes they may complain of it, but this is the exception rather than the rule.

When effusion forms, it produces an area of enlarged cardiac dullness. It is rare for gross dilation of the heart to take place rapidly in rheumatic fever, except as a terminal event. A rapid gross enlargement of the cardiac area clinically and by X-ray is usually due to pericardial effusion. If the cardiac shadow is grossly enlarged at the time the patient is first seen, and rapidly returns to a much smaller degree, again one can feel reasonably certain of dealing with a pericardial effusion.

N.B. Marked change in heart size due to myocarditis takes at least 2 - 4 months to occur and usually much longer. Marked change in size of the cardiac shadow frequently occurs in a month when pericardial effusion is present.

B. *Myocarditis*

The diagnosis of myocarditis in rheumatic fever is made clinically in the presence of certain evidence.

1. Electrocardiographic evidence.

2. Clinical signs referable to the heart.
   (a) Based on post-mortem studies, it is generally agreed that if significant rheumatic murmurs occur in the heart, whether directly valvular or of myocardial origin, myocarditis is present.
   (b) If pericarditis is present, myocarditis is, of necessity, present also.
   (c) When enlargement of the heart can be demonstrated, myocarditis underlies the change in size.
3. Heart failure.
4. A sign to arouse suspicion is the gradual decrease in the exercise tolerance. A tachycardia during sleep is also suggestive of myocarditis.

The Mitral Systolic Murmur

Rheumatic heart disease is most commonly diagnosed by finding the characteristic murmur. This is, of course, the mitral systolic murmur. It is heard with maximum intensity at the apex and is propagated towards the axilla. Systolic murmurs in the aortic area, pulmonary area, and down the left border of the sternum are thus eliminated. The characteristic murmur is soft and blowing early in the disease and later becomes harsh and more widely propagated. The functional murmur, at or just inside the apex, is sometimes confused with the rheumatic one. It is usually less distinct and shorter and often scratchy in quality, less purely blowing. Rheumatic murmur may be accompanied by an obscured or absent first sound at the apex. The non-rheumatic murmur is usually accompanied by a well-heard first sound. In doubtful murmurs the fact that it gradually becomes louder or, having been distinctly heard, is becoming fainter, is helpful and is usually indicative of an active heart lesion. A faint systolic murmur localized at the apex, which is heard only when the heart is speeded up by fever or exercise, is usually not significant. Unimportant apical murmurs tend to become very faint with change in position of the patient, or with different respiratory phases. Finally, it should be stressed that practice and training are necessary prerequisites to a satisfactory diagnosis in a number of cases. This is especially true when interpreting the quality of a borderline type of murmur.

It is not always possible to say early in the disease whether the mitral systolic murmur originates from a valvular deformity or physiological incompetence. It appears highly probable, however, that those that persist for six months or longer are usually due to valvular deformity. The mitral systolic murmur is usually due to valvular disease if any of the following are present: (1) a loud constant murmur transmitted to axilla; (2) accompanied by a thrill; (3) definite cardiac enlargement; (4) persistence of murmur for more than six months.

There are faint transient murmurs heard during acute illness of any origin which appear to be due to a variety of causes such as speeding up the heart, minor changes or functional defects, mild anaemia, change in viscosity of the blood, etc. In rheumatic fever, there may be very minor myocardial defects occurring as a result of the disease that cannot be distinguished from those of functional or non-pathological origin. In any case, they disappear in a short time and leave no signs of permanent damage. Because of the difficulty in establishing a distinct diagnosis of heart disease in these highly questionable cases, I would recom-

mend that, for statistical purposes, the diagnosis of rheumatic heart disease be reserved for those individuals who have definite signs at the end of their illness—that is, when they are ready to go home from hospital. This will help to eliminate the marked difference in recorded incidence of heart disease found in rheumatic groups in different studies. For example, during the recent war, papers have appeared of rheumatic fever with incidences of heart disease varying from 10 to 90 per cent. (From the point of view of treatment, it is necessary to treat all acute rheumatic fever patients as if they had or were going to get heart disease. This is, of course, to prevent or minimize any damage of the heart muscles or valves.)

It is suggested that, in addition to the anatomical diagnosis laid down in the booklet on nomenclature, the degree of mitral valvular deformity in many cases be classified as none, moderate or severe. Mitral stenosis would then be defined as severe deformity with narrowing.

Classification would then be as follows:

1. No valvular disease.
2. Moderate thickening.
3. Marked thickening and deformity—no narrowing.
4. Thickening and deformity with narrowing (stenosis).

Clinically, these degrees of valvular damage could be differentiated by the following points.

GROUP I. *Myocarditis—No valvular disease.*

This is the most difficult and controversial group of all. Various physicians interpret doubtful murmurs in different ways. Certain minor electrocardiographic abnormalities are taken as evidence of myocarditis. Probably no two examiners would agree on the interpretation of signs in relation to this group. Therefore, from the scientific point of view, it is more satisfactory to estimate the incidence of heart disease developing in a group of rheumatics by taking the number of those showing signs at the end of their illness (which is usually about three months after onset).

However, in spite of the difficulties mentioned above, we should make a concerted attempt to diagnose the presence of myocarditis in rheumatics without valvular disease. With this in mind, the following is presented.

Clinically, this type of heart involvement might be distinguished by the presence of a systolic murmur, low blowing in character, occurring during the attack of rheumatic fever and disappearing as the heart returns to normal with prolonged rest in bed. Such a murmur might be confused with a functional one in a normal heart or a mild congenital defect, but its presence in a rheumatic patient, and the fact that it disappears while the patient is under observation, helps to decide its origin. (The pitfalls are discussed in the preceding note on the mitral systolic murmur.)

A second point would be the development of cardiac enlargement with no signs of valvular disease.

A third point would be the appearance of electrocardiographic abnormalities recognized by the New York Heart Association booklet as indicative of myocarditis.

Coombs found that a number of systolic murmurs occurred and disappeared during the first attack of rheumatic fever. It is this type of murmur we should try to diagnose and classify in Group I. If the murmur persists for many months, it is probably due to valve damage rather than to myocarditis. There do not appear to be many rheumatic fever cases that develop sufficient myocardial damage to produce a definite systolic murmur without developing, at the same time, sufficient valvular damage to explain a murmur.

GROUP II. *Moderate Thickening of the Mitral Valve.*

Mild to moderate rheumatic heart disease is usually accompanied by some valvular involvement. It is thus desirable that we should diagnose slight to moderate thickening of the mitral valve with little or no deformity. This is nearly always associated with a mitral systolic murmur with its maximum intensity at the apex and transmitted to the axilla. It is not appreciably altered by change of rate or position of the heart and respiration has little effect on it. The heart is usually enlarged to some extent but frequently this is not demonstrable clinically or by X-ray. The first heart sound is often indistinct either because of its close association with a systolic murmur or because of a prolonged conduction time. This systolic murmur persists and will be present when the patient leaves the hospital after the first attack of rheumatic fever when valvular damage occurs. Occasionally this type of murmur disappears, as has been shown by Jones (2) and co-workers who found that 10 per cent of systolic murmurs present at the time of discharge from hospital (which were probably similar to the one described above) disappeared over a ten-year period. The heart sound is often readily heard in this group. It is sometimes noted that this type of murmur will get louder and harsher while the heart is getting smaller.

GROUP III. *Thickening and Marked Deformity—no narrowing.*

This type of valve damage is usually accompanied by gross enlargement of the heart. There is a loud rough or harsh systolic murmur heard in the mitral area and transmitted over the precordium and sometimes through to the back. Occasionally it is accompanied by a mitral diastolic murmur. The apex beat is usually diffuse and moderately forceful until the final stages of the disease, when it is diffuse and weak; occasionally there is a diastolic thrill. The first heart sound is obscured at normal or slow rates, but when the heart is speeded up, it frequently becomes slapping in nature with a quality that suggests a damaged valve. This group is composed of those who have had a severe infection, usually repeated, which has produced diffuse carditis with marked enlargement of the heart over a relatively few years. Such cases end fatally in a shorter time than the more slowly progressive cases with mitral stenosis. At post mortem the heart is 2 to 4 times its normal size and the mitral valve opening instead of being narrowed is larger than normal, due to the severe cardiac disease. The explanation of this group is that the rheumatic infection is more severe than group IV and leads to a rapid enlargement of the heart where narowing of the mitral valve cannot occur. However, there is usually a relative stenosis since the heart chambers are large in comparison with the valvular opening. These cases form the most severe group in the rheumatic infection—more severe than the more slowly progressive mitral stenosis cases.

GROUP IV. *Deformity with Narrowing (Mitral Stenosis).*

These hearts may appear normal or grossly large in size, but usually not as large as in group III. The rheumatic attacks have been mild and the damage has concentrated on the mitral valve rather than the myocardium. In the vast majority the following three signs are present:

(a) A characteristic diastolic rumble localized at the apex and usually accentuated in the pre-systolic phase.
(b) An accentuated snapping first heart sound at the apex.
(c) Enlargement of the left auricle demonstrable radiologically. Other helpful signs are enlargement of the right ventricle and pulmonary artery and accentuation of the second sound of the pulmonary area, forceful apical thrust of the heart and a diastolic thrill at the apex.

The diastolic murmur in the presence of auricular fibrilation is often heard only during early diastol, is very faint or may have disappeared completely. It can sometimes be heard only when the patient is lying on his back or side and is almost always louder in this position than when erect. Acceleration of the heart rate by exercise will frequently make definite a murmur which is otherwise inaudible. One may make a diagnosis of mitral stenosis when there is a well-heard mitral systolic murmur coupled with an enlarged left auricle as demonstrated by barium swallow.

MITRAL DIASTOLIC MURMUR

In assessing the state of the heart valves in rheumatic fever, one of the commonest mistakes is to make a diagnosis of early mitral stenosis when it is nonexistent. In this connection, it might be mentioned that Bland (4) and coworkers found that of 68 hearts diagnosed clinically as having mitral stenosis, only 21 showed anatomical stenosis of the mitral orifice when they were examined at post-mortem. In spite of the fact that mitral stenosis occasionally develops in two years, the great bulk of these cases take five to fifteen years or longer to become worthy of that diagnosis. The criteria for diagnosis laid down in the nomenclature booklet should be strictly adhered to.

The most common cause of error appears to be a misinterpretation of the third sound as an early or mid-diastolic murmur. The sound is, of course, present in a fair percentage of normal individuals but is faintly heard. However, in rheumatic heart disease the sound often becomes accentuated and is easily heard on auscultation. This is particularly true during or following the first and second attack of rheumatic heart disease. It is of short duration and follows the second sound at the apex after an interval of .10 to .12 seconds. It is low-pitched as a rule and, therefore, it is understandable that it may be confused with a diastolic murmur. With the aid of a phonocardiograph apparatus, it can be readily differentiated. Furthermore, with the use of this apparatus, one can then train the ear and make the proper diagnosis in almost every case without it.

AORTIC DIASTOLIC MURMUR

When there is an aortic diastolic murmur (where syphilis or other acute illness can be ruled out), one is almost invariably dealing with rheumatic fever and the diagnosis is definite. We usually distinguish between an aortic regurgi-

tation with a simple aortic diastolic murmur, and free aortic regurgitation with peripheral signs such as Corrigan's pulse and capillary pulsation. It should be remembered, of course, that nephritis, thyrotoxic myocarditis, and coarctation of the aorta may also produce aortic insufficiency, but these present no diagnostic problem.

The First Heart Sound

An Accentuated First Sound

An accentuated first heart sound at the apex is generally found in narrowing and deformity of mitral valve (mitral stenosis). In this pathological condition, the sound has a slapping or booming quality that is usually somewhat different from the physiological causes of accentuation such as acceleration of rate, etc. It appears to be due to two things at least:

(a) A snapping shut of the open valve with sudden tension.

(b) An alteration of the sound due to the thickening of the delicate mitral valve structure. This slapping can be heard also in patients who have a mitral ring which is dilated instead of being narrowed and have grossly enlarged hearts with damaged mitral valve. However, the chief value of noting a slapping or booming first heart sound in rheumatic heart disease, is, of course, as an aid in making the diagnosis of mitral stenosis.

A Softened First Sound

A useful finding in rheumatic fever is a softened heart sound. This, of course, may at times be produced by pericardial effusion, thick chest wall, weak myocardium or a slow heart, but the most common cause in rheumatic fever is a lengthened conduction time (6). When the PR interval is .21 seconds or over, it is usually associated with a softened first heart sound. Sometimes, counteracting effects prevent this (such as increased heart rate) but in the majority of instances one can predict, by clinical examination, whether the PR interval is lengthened or not. It is easier to make this observation when little or no systolic murmur is present. When a well-heard murmur is present, the first sound is so intimately associated with it that it may be difficult to estimate the intensity of the sound. However, a little practice usually makes it possible to pick out the degree of volume of sound at the beginning of the murmur. Since approximately 25 per cent of rheumatic fever cases show this abnormality at some time in the earlier stages of the disease, the diagnostic value is obvious.

Enlargement of The Heart

The diagnosis of enlargement of the heart is frequently difficult to make in rheumatic fever. This is particularly true in the early stages of the disease when one can reasonably expect slight enlargement but yet is often unable to demonstrate it clinically or by X-ray. Here again, the criteria for enlargement appearing in the nomenclature booklet should be adhered to. They refer one chiefly to Ungerlieder's tables when determining enlargement radiologically. They accept 10 per cent above normal as indicative of enlargement. It might also be pointed

out that another method is to compare heart X-rays taken an interval apart. If this shows a 10 per cent increase or decrease, one is undoubtedly dealing with cardiac enlargement (provided it cannot be accounted for by natural growth in a child). It is recommended that the degree of enlargement should be systematically recorded—slight, moderate, or gross.

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POLIOMYELITIS AND THE MEDICAL OFFICER OF HEALTH

WITH the approach of August and September, there is usually some exaggerated public fear of outbreaks of poliomyelitis. Without in any way encouraging or even condoning complacency, it is the duty of the health officer to allay unwarranted fear and apprehension rather than excite or add to it. It is only right that the people should be told the truth—and the truth is that, as is the case in the majority of infections, the presence of the causative agent of poliomyelitis, as witnessed by the occurrence of one or two cases in a community, does not necessarily mean widespread infection; that even widespread infection does not necessarily mean widespread disease; and, too, that disease does not necessarily mean paralysis. Even in times of high epidemic prevalence, though infection is widespread, only a few of the infected develop disease and of these, few suffer paralysis and of these few die.

Over recent years considerable has been added to our knowledge of poliomyelitis. For far too long we believed that tetanus toxin spread by way of the nervous system. Abel's work proved conclusively that that concept arose from erroneous interpretation of observations, experimental and clinical; the transport of micro-organisms, or even toxins, is not the function of the nervous system. This work and Melnick's recovery of poliomyelitis virus from the blood-stream should do much to correct the previously unduly popular concept of the neural transport of poliomyelitis virus to the central nervous system. We know now that the virus can be recovered from the throat, from the gastro-intestinal tract, and from faeces of cases and passive carriers. It has been recovered from flies and even from sewage. These facts give us our best lead to some understanding of its spread. While it would be ridiculous to assume that flies are the only means of transmission, the usual seasonal distribution of poliomyelitis, closely co-inciding as it does with that of flies and with the occurrence of other fly-borne infections, coupled with the recovery of the virus from flies, leaves practically no doubt that flies can be and are one of the factors in the spread.

As, with the poor development of a sanitary conscience, our fingers are constantly carriers of infection from both ends of the gastro-intestinal tract, and, as Chapin so well said, "in the transfer and trade in such infection by this means

there is complete reciprocity, uninhibited by any customs barriers;" and as our fingers invariably find their way to our mouth, it is easy to understand how ordinary association with people is associated with the transfer of gastro-intestinal infections, including poliomyelitis; similarly our fingers may well be important factors in the transfer of so-called respiratory infections. In our all too technical and fanciful explanations, we would do well to forget about the terms direct and indirect contact, and think more not only of our fingers but of all the possibilities for exchange of infection that every-day associations in life provide. Conscious of the fact that flies find faeces a favourable food and environment, that our fingers always harbour invisible infection and that they are the common carrier between the rectum and the mouth of the individual, and between individuals, we are not powerless in the face of an epidemic. The means of control at present is in the further development of a sanitary conscience which alone can maintain high standards of personal and environmental hygiene. This is what the public should be told.

GREATER SAFETY IN FUMIGATION

THE ever-present danger attendant on cyanide fumigation was recently illustrated in Alberta, where a death followed hydrocyanic acid gas fumigation, although the procedure had been under the direction of a licensed pest-control operator. The widow of the deceased brought legal action against the fumigator, the City of Edmonton, and a sanitarian employed by the local board of health, alleging that negligence in the use of cyanide had caused her husband's death. The judgment handed down by the Supreme Court was that the pest-control operator was negligent in his duties in that he did not personally supervise the airing of the rooms and bedding at the termination of the fumigation period, and judgment was entered against him in the sum of $15,250 with costs. The City of Edmonton and the sanitarian of the local board of health were judged not to be responsible for the death.

This judgment is of interest to health authorities. It is realized that such deaths are rare, but it would seem that, as they do continue to occur and as a more efficient method for the control of bed-bugs and other insects is now available, health authorities might well consider discontinuing the issuing of licences to operators for the use of hydrocyanic gas for fumigation. The use of safer insecticides such as DDT for insect control provides a better service to the public and extends the usefulness of the procedure.

Letter From Great Britain

FRASER BROCKINGTON,
M.R.C.S., Eng.; L.R.C.P., Lond.; D.P.H.; B. Chir., M.D., Camb.; M.A. Camb.; Barrister-at-Law

County Medical Officer
Public Health Department, West Riding of Yorkshire
Wakefield, Yorkshire, England

THE greatest event in English Medicine, the birth of the National Health Service, has passed into history. Gestation was prolonged and often complicated, labour quick and uneventful, and now the baby grows apace. The Regional Hospital Boards have been established (Statutory Rules and Orders 1947 No. 1297) and the names of the members published today (June 24th, 1947). The Act did not specify any set composition for these boards, so that the names of those selected by the Minister have been studied with interest. The number varies in England and Wales from 21 to 31 per board and the names are given in 3 groups of roughly equal numbers to retire successively in March 1949, 50 and 51. The constitution is not unlike that predicted and given in my last letter, e.g. in the Leeds Region, of the 23 members, 9 are registered medical practitioners (including the Dean of the Faculty of Medicine, who is also the Professor of Pathology, and the professors of medicine and obstetrics), and one is a State Registered Nurse who is the Matron of a municipal hospital. The map shows the areas covered by the 14 boards (not 16 as previously suggested) in England and Wales.

Executive Council for general medical, dental and pharmaceutical services have likewise been constituted according to the formula of the statute. A spate of circulars from the Ministry of Health has been issued to local health authorities (the County and County Borough Councils) indicating the manner in which schemes should be

AREAS OF REGIONAL HOSPITAL BOARDS

prepared and submitted for implementing the sections of the Act relating to immunization, vaccination, ambulance service, the care of mothers and young children, district nursing, midwifery services, etc. The dates for submitting such schemes have been laid down and as they all fall due before the end of this year there has been an air of

bustle and activity in health departments, sometimes bordering on the feverish. Many medical officers of health have felt that the process has been unduly hurried and made it impossible to give the consideration required to the many matters of detail involved. It has been a matter of some comfort that the operative date for the Act has been postponed from 1st April to the 5th July next year.

Advertisements are now appearing in the press for the two posts of Senior Administrative Medical Officer and Secretary to the Regional Boards. The Medical Officerships are offered at salaries varying between £2,000 and £2,500 and the Secretaryships at £1,400 by £50 to £1,700. These posts will presumably be filled before the end of the year and the intervening time before the boards are due to take over ownership of all institutions in their areas will be spent in setting up management committees for hospitals and groups of hospitals and in arranging for specialist staffing. The Act contemplates that most of the actual management of hospitals will be performed by management committees acting as the agents of the Regional Boards. The Minister wants these committees to enjoy the maximum of autonomy in regard to local day-to-day administration, reserving power to the Boards to decide questions of wider policy, to control major building operations, to approve the committees' budget and other similar functions. All the staff of the hospitals and specialist services in each area (except that of the teaching hospitals) will be in the contractual employment of the Boards; but apart from these medical and dental officers, the actual selection, appointment and dismissal of staffs will be made by the management committee and not by the Boards. This should ensure an effective decentralization which will go a long way to meet the fears of the medical profession that the work of the hospitals would be hampered by a meticulous central control. The danger of excessive treasury control still remains. All monies will be found by the State. Each board will have to submit its budget for approval and the Treasury may insist also on a detailed examination of the budgets of management committees. Those who appreciate the full effect of treasury control remain apprehensive on this score despite the Minister's oft-given assurance that he wants to leave the regulations of their own procedure in the hands of the boards and that he wants them to feel, although acting as his agents, a lively sense of independent responsibility.

Management Committees will be expected to cover a group of hospitals (including clinics in premises separate from a residential institution) which are functionally related so as to form jointly the equivalent of a full-scale general purpose hospital covering all the more normal specialities, e.g. a voluntary general hospital, a municipal general hospital, a maternity home, and an isolation hospital in a large town with three or four general practitioner ("cottage") hospitals in small neighbouring towns. The total number of beds of a management committee must vary according to circumstances from quite small units to groups of hospitals with more than 1,000 beds. In certain cases large mental hospitals, tuberculosis sanatoria and certain special kinds of hospitals will have separate management committees.

"Hospital" is used in its widest sense

covering in-patient and out-patient accommodation in all kinds of hospital and associated clinics or dispensaries. It includes tuberculosis sanatoria, infectious diseases hospitals, maternity homes, mental hospitals and all other institutions for the reception and treatment of the acute or chronic sick or mentally ill or defective and convalescent institutions (as distinct from rest or holiday homes). It covers all branches of medicine and surgery and medical rehabilitation. Hospitals provided by the "Services" and the Ministry of Pensions are excluded and it is possible for the Minister to disclaim transfer in other cases. Such a disclaimer is likely to be rarely made but it is possible in such cases as the Royal Masonic Hospital and certain Roman Catholic and other denominational hospitals where the sources from which the hospital patients are drawn may be very wide and revenue international. Considerable difficulties are expected in separating transferable premises which form part of a building used also for non-hospital purposes, e.g. tuberculosis dispensaries in a large clinic or the sick wards in a Public Assistance Institution. The Board of Governors of teaching hospitals will not be within the jurisdiction of the Regional Boards but will be directly responsible to the Minister and act as his agent for the management of their own hospitals.

The Regional Boards have the future of medicine in their control and this applies to preventive medicine also to an extent which has not yet been fully appreciated. Preventive medicine has reached the end of an era in which the causes of ill-health were largely environmental; an age in which the efforts of all bodies concerned in the prevention of disease concerned themselves very properly with the mass of ill health due to certain obvious and easily remedied conditions. A new era begins.

It is idle to pretend that England is now a paradise of good housing, wholesome feeding, pure water and unpolluted air. A visit to the West Riding of Yorkshire would disabuse anyone of such a delusion. Nevertheless in comparison with the conditions present when medical officers of health were first appointed, the circumstances of today are a paradise. Moreover, the way to continued improvement along these lines is clear and it is plain to see that action on national lines can and will proceed within a short time to completion and progress has gone so far that underlying causes of ill health of more complex origin have been laid bare. This residue of ill health requires much more scientific handling. The new era to which I referred is the era of specialism in preventive medicine. The medical officer of health can no longer operate alone but must be reinforced by each and every form of medical specialist and the increasing army of medical auxiliary specialists. He must use all these in their particular spheres of action, the pathologist, bacteriologist, biochemist, the obstetrician, gynaecologist, the paediatrician, the ear, nose and throat specialist, the ophthalmologist, oculist, optician, orthoptician, the child psychiatrist, psychiatric social worker, psychologist, the orthopaedic surgeon, physiotherapist, the dietitian, the mental health officer, mental deficiency social worker, mental deficiency home teacher, the health visitor, the sanitary inspector, the almoner, the tuberculosis officer, the tuberculosis nurse, the venereal disease special-

ist, the venereal diseases social worker, the home adviser (for problem families), the mass radiography radiologist and radiographer, and no doubt many others. Health in the future will be achieved by highly specialized technical machinery; the day of obvious sanitary reform is past. Like all new eras, the moment of beginning is seldom sudden and for some years now extensions along these lines have been taking place. The reorientation of local authorities under the new Act will however mark the true beginning by localizing the functions in the hands of the major health authorities and at the same time relieving them of responsibilities for institutional administration.

Regional Hospital Boards will control most of the specialist personnel, the weapons with which the new specialist approach to preventive medicine must be made. The work of the Regional Hospital Boards must therefore be planned in relation to that of the Local Health Authorities; specialists must give a due proportion of their time to the preventive field and the provision of beds in hospitals must be arranged in conjunction with the needs of the Local Health Authorities. Maternity home beds must be dependent on the circumstances of the area, mental deficiency colonies on the ascertainment by the L.H.A., tuberculosis beds must be related to L.H.A. requirements, children's beds should follow the work of the paediatricians in the school health service, special hospital schools for long-stay orthopaedic and rheumatic children must be established in concert with the school health authority. Venereal disease clinics, tuberculosis dispensaries, infectious diseases hospitals, smallpox hospitals, and mental hospitals are likewise dependent upon environmental circumstances within the knowledge of the L.H.A. The future calls for an integration of the hospital service and the preventive medical service of the most detailed kind. Should the hospitals elect to continue on their own path, treating diseases at the moment of hospitalization and paying no regard to the vast requirements of the new preventive field, the consequences would be most serious. Many will regret that the beginning of the new era in preventive medicine should have coincided with its separation from the hospital service from which, like a foetus in embyro drawing blood from the mother's placenta, it too must draw its life blood.

SANITATION

AN EXPERIMENT IN MOSQUITO CONTROL BY AIR-BORNE SPRAYS

R. F. HEATH, M.C.I.C.
Chemist, Department of Public Health, Toronto

DURING the summer of 1945, a group of representatives from different municipalities in Southern Ontario met at Hamilton, at the invitation of that city, to discuss the problem of mosquito control, with particular reference to the use of 2.2 bis. (p-chlorophenyl)—1, 1, 1, trichloroethane, commonly known as DDT, when applied aerially in the form of an oil spray.

Resulting from the discussion, a committee, known as the Mosquito Control Committee for the municipalities of Southern Ontario, was set up to co-ordinate control measures in Southern Ontario, and to act as the reference point for all interested municipalities, with Controller Nora Henderson of Hamilton as the first chairman.

At another conference held at Toronto in the early part of April, 1946, Dr. R. H. Lane, Medical Officer of Health for the Village of Swansea, stated that his municipality suffered considerable annoyance each summer from the presence of large numbers of mosquitoes. This he attributed to the fact that Swansea is bounded on the west by the River Humber, which at this point traverses an expanse of marshland, and on the east by Grenadier Pond, a small lake forty-five acres or so in extent, whose shores are devoid of dense undergrowth for the most part, although they are interspersed here and there with marshy tracts. In addition, a long narrow body of water known locally as Catfish Pond lies in the southeast section of the Village. Grenadier Pond is included in Toronto's High Park which forms the east boundary of Swansea.

Mosquitoes do not recognize political boundaries; hence an agreement was reached whereby both municipalities undertook to engage in a joint program of control in order to abate the nuisance in Swansea.

Accordingly, a survey of the marshlands was made and it was estimated that one hundred and forty acres should receive treatment. The survey did not take into account the entomological aspects of the problem, such as the distribution, relative densities, and identification of mosquito larvae, although it is fully appreciated that knowledge gained from such a survey is of prime importance in mosquito control work. Failing this information, it was necessary to assume that all the marsh areas were potential breeding spots.

Preparation of the DDT Solution

A 2 per cent solution of DDT was prepared by dissolving the required amount in a kerosene—light fuel oil mixture, blended in the proportion of fifty gallons of the former to ninety gallons of the latter. "Flake" DDT was supplied by Naugatuck Chemicals, Elmira, and the solvent oils were procured from the McColl-Frontenac Oil Company, Toronto. Solution was effected in forty-five gallon drums which were shipped to Leavens Brothers Air Services Limited, Barker Field, the firm engaged to carry out the actual spraying operations.

Presented before a meeting of the Mosquito Control Committee, Hamilton Ontario, March 26, 1947.

Description of Spraying Equipment

A Pitcairn Autogyro, especially adapted for spray purposes, was used in the experiment. Aircraft of this design possess an advantage over the more conventional types in having greater maneuverability at lower elevations and slower speeds; an important consideration where closely built-up areas are concerned.

The spraying apparatus consists of a thirty-gallon tank mounted in the front cockpit of the machine. From the bottom of the tank, and passing a quick-acting shut-off valve operated by the pilot, a rubber hose conducts the spray solution to a horizontal metal tube eight and one-half feet long, with an outside diameter of one and one-half inches, fastened into place under the fuselage. A series of one-eighth inch holes spaced half an inch apart are drilled in the bottom of the tube. The solution flows by gravity from these openings, when it is immediately broken up into a fine spray by the slipstream from the propeller.

Application of the Spray

The first spraying was made on the morning of May 23rd, the entire treatment being completed between the hours of 6 and 9 a.m. Weather conditions were ideal, with practically no wind to drift the spray away from the point of application. A second spraying was made on the morning of July 13th, between the hours of 7 and 10 a.m., again under good weather conditions. The spray was applied at an average rate of one gallon per acre, at an average speed of sixty miles per hour and an average height of one hundred feet.

The small capacity of the tank necessitated several return trips to the airfield, about six air miles distant from the area, in order to refill with the solution; nevertheless, a great saving in time is at once apparent. Herms and Gray estimate that the area covered by one man with a knapsack sprayer of five gallons' capacity averages five acres for an eight-hour day.

Cost of Treatment

The total cost of treatment worked out at $1.75 per acre. It is interesting to compare this cost with those given by Clark for hand and power spraying, when using oil alone, in Alameda County, California, during 1931 and 1932. In this case the cost was $5.40 and $3.12 per acre for hand and power spraying respectively.

Result of Treatment

An extensive and careful canvass among the residents of Swansea together with observations in the High Park district showed that a definite improvement in conditions was effected over those prevailing in previous years. Analysis of opinions showed that the mosquito nuisance was considerably modified from the time of the first spraying, May 23rd, to June 15th, a period of three weeks. Towards the end of June an increase in numbers was reported, which continued to the time of the second spraying on July 13th. After this date an immediate decrease was noted and by the first week in September the consensus was that the insects were practically non-existent.

Some deviation from the general trend was reported in the High Park district. Here an increase of slight duration occurred towards the end of the second week in August, with a progressive decrease to the beginning of September.

The increase in number of mosquitoes for the two weeks from the end of June to July 13th may be due to two reasons:

(1) Miscalculation as to the exact time when the second crop was in the larval stage. If this were the case, it would have been necessary to set the date of the second spraying back for a week or ten days in order to ensure a more complete kill before the adult stage was reached.

(2) Incomplete coverage of all the breeding spots in the area. This is probably true, since the

program was financed by special grants made by both municipalities, and it was necessary to keep within their respective budgets. It is known that some sections of the Humber Marsh and some areas in High Park were not included.

Effect on Wild Life

The well-known toxic effect of DDT on a great variety of insect life has aroused considerable interest with respect to the destruction of insects constituting the food supply of birds and fish, in whole or in part. At the present time conclusive evidence bearing on this subject is lacking, but the fact remains, however, that spray solutions containing DDT should be regarded as being somewhat indiscriminate in their action in so far as many forms of insect life are concerned.

The areas comprising Swansea and High Park have long been considered as bird sanctuaries by the residents of these districts. Birds of all kinds are to be found and they are encouraged to settle there by generous feeding on the part of the inhabitants. On this account a watchful eye was kept for unfavourable reactions among the feathered colony, during the summer of 1946. To date the spray treatment does not appear to have disturbed their way of life in any particular.

SUMMARY

One hundred and forty acres of marshland in the Swansea—High Park area were sprayed from the air with 2 per cent solutions of DDT in petroleum oils at reasonable cost. Within the limits of the experiment a marked abatement of a recurring mosquito nuisance was noted.

It was demonstrated that sprayings of this kind can be successfully carried out without fear of damage or nuisance in built-up areas when proper precautions are taken.

Wild bird life in the area appeared to escape unharmed.

Acknowledgments are due to Dr. L. A. Clarke, Medical Officer of Health, Hamilton; Dr. R. H. Lane, Medical Officer of Health, Swansea; and various Toronto sanitary inspectors and the Works and Street Cleaning Departments for assistance in this work.

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2. Herms and Gray: Mosquito Control, 2nd ed., 1944.
3. Clark, J. A.: Power Spraying Equipment and Methods. Proc. 3rd Annual Conference, Mosquito Abatement Officials in California, 1932.

National Convention
and
13th Annual General Meeting
Canadian Institute of Sanitary Inspectors

Marlborough Hotel, WINNIPEG

SEPTEMBER 15-17, 1947

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MORNING SESSION, SEPTEMBER 15

9.00 a.m.—**Registration.** Fee $1.00 for members and visitors. Registrar: GEORGE W. KELLY, Secretary-Treasurer.

10.00 a.m.—**Opening General Session.** FRED C. AUSTIN, President.

10.05 a.m.—**Address of Welcome.** MORLEY S. LOUGHEED, M.D., D.P.H., Medical Officer of Health, City of Winnipeg.

10.20 a.m.—**Public Health Education and Public Relations.** MARGARET NIX, M.P.H., Director, Health and Welfare Education, Manitoba Department of Health and Welfare.

11.15 a.m.—**Films.** "Rural Health", "Water, Friend or Enemy".

AFTERNOON SESSION

1.30 p.m.—**The Sanitary Inspector's Approach to Industrial Hygiene.** HUGH MALCOLMSON, M.D., D.P.H., Director, Section of Environmental Sanitation, Manitoba Department of Health and Public Welfare.

2.30 p.m.—**Films:** "Defence against Invasion", "Clean Water".

3.00 p.m.—**The Health Department and the Police Court.** BRIG. ORVILLE M. M. KAY, C.B.E., LL.B., E.D., Crown Prosecutor, City of Winnipeg.

4.00 p.m.—**Industrial Hazards and Methods of Assessment by Mechanical Instruments.** L. B. ENGLISH, B.Sc.,C.E., Manitoba Department of Health and Welfare.

MORNING SESSION, SEPTEMBER 16

9.30 a.m.—**Thirteenth Annual General Meeting and Election of Officers.**

AFTERNOON SESSION

1.30 p.m.—**Tour of Inspection.**

MORNING SESSION, SEPTEMBER 17

9.00 a.m.—**Protection of Public and Private Water Supplies.** L. A. KAY, M.A.Sc., P. Eng., Director, Public Health Engineering, Manitoba Department of Health and Public Welfare.

9.45 a.m.—**Pest Control (Round-table Discussion).** Chairman: ALEX CROSS, C.S.I.(C.), Winnipeg Health Department. Sub-chairmen: CHARLES RIESS, President, Canadian Pest Control Operators' Association; MARK FLATTERY, C.S.I.(C.), Senior Inspector, Manitoba Department of Health and Public Welfare; J. S. SKAPTASON, Entomologist.

10.45 a.m.—**Film:** "Vandals in the Night" (rats).

11.00 a.m.—**Bedding and Upholstery (Round-table Discussion).** Chairman: WM. WARD, B.A., M.C.I.C., Chemist in charge, Industrial Hygiene Laboratory, Manitoba Department of Health and Public Welfare. Sub-chairmen: FRED C. AUSTIN, A.R.San.I., MARK FLATTERY, C.S.I.(C.), and CHARLES RIESS.

AFTERNOON SESSION

1.30 p.m.—**New Developments in Milk Control.** E. J. RIGBY, D.V.M., B.S.A., C.S.I.(C.), Chief Food and Dairy Inspector, Winnipeg Health Department.

2.15 p.m.—**Streamlining Sanitation.** MORLEY JAMIESON, B.S.A.,M.Sc., Assistant Professor of Bacteriology, University of Manitoba.

3.15 p.m.—**Restaurant Inspection (Round-table Discussion).** Chairman, FRED C. AUSTIN, C.S.I.(C.); Sub-chairmen: A. T. MARTIN, C.S.I.(C.), Winnipeg Health Department; E.J. RIGBY, D.V.M., B.S.A.; and R. MORROW, D.V.M., Assistant Chief Food and Dairy Inspector, Winnipeg Health Department.

4.15 p.m.—**Modern Methods in Refuse Disposal.** W. N. VENABLES, B.Sc.(Eng.), M.A.Sc., Winnipeg Health Department.

EVENING SESSION

7.00 p.m.—**Dinner.** Guest Speakers: His Worship Mayor GARNET COULSTER, K.C., City of Winnipeg; Alderman JAMES BLACK, Chairman, Committee on Health, City of Winnipeg.

Canadian Public Health Association

EMPLOYMENT SERVICE

Advertisements regarding "positions available" and "personnel available" will be published in from one to four consecutive issues, depending upon the requirements of the agency or person concerned. They are limited to seventy words or less, with a confidential box number if desired. There is no charge for this service to members of the Association. Health agencies are charged a flat rate of $10.00 for the advertisements (up to four consecutive issues) and for the service. The rate for non-members is $5.00. The service includes confidential clearing of information between prospective employer and employee if desired.

Wanted: Medical Officer of Health. Applications will be received by the undersigned up to Monday, the 15th day of September, 1947, for the position of Medical Officer of Health for the Township of York. A degree from an approved medical school and a Diploma in Public Health (or its equivalent) are required. Please state salary required and full particulars of qualifications and experience. Write Howard A. Hall, Township Clerk, 40 Jarvis Street, Toronto.

Wanted: Director of Tuberculosis Control Division. A qualified physician is required for above position immediately. Duties include organizing and controlling of mobile chest clinics and correlating the activities of diagnostic services. Qualifications—must have experience in clinical and X-ray diagnosis of tuberculosis and some experience as an administrator; should have Diploma in Public Health. This is a permanent position carrying all Civil Service benefits. Salary range, $4,800—5,400 per annum. Applications are invited, stating age, school of graduation, date and administrative experience. Apply Chairman of the Civil Service Commission OR the Chief Medical Officer, Fredericton, N.B.

Wanted: Public Health Nurses for Welland and District Health Unit. Minimum salary $1,700.00; regular holidays with pay. Apply in writing to J. D. Watt, Secretary, 120 King Street, Welland, Ontario.

Wanted: Field Safety Man tor pulpwood logging operations. Prefer war veteran with first-aid and sanitation qualifications. Starting salary of $160.00 per month plus board allowance, miscellaneous expenses, and group medical service. For further particulars write Personnel Department, The Ontario-Minnesota Pulp and Paper Company Limited, Kenora, Ontario.

CANADIAN CANCER SOCIETY

SASKATCHEWAN BRANCH

Applications are invited for a Fellowship of $2,500 to be known as the Saskatchewan Cancer Research Fellowship and which may be held at any cancer research laboratory or institute approved by the selection committee.

Applicants must have had research training equivalent at least to that required for the Ph.D. degree in biochemistry, biophysics, cytology or some branch of biology that may be applied to fundamental research on the nature and development of cancer. A medical degree is not essential. The award will be for a two-year term subject to the holder submitting a satisfactory report on his work at the end of one year, with a recommendation by the director of the laboratory in which he is working.

Applications giving particulars of university education, both under-graduate and graduate, research experience and papers published, with photograph and copies of three recent testimonials from persons having first-hand knowledge of the candidate's ability and character, should be sent immediately to Dean S. Basterfield, Regina College, Regina, Sask.